Improved Supportability Analysis

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Preface

This document is the fifth in a series of reports which began in June 1992 under NASA (LRC) Grant No. NAG1-1-1327. The primary research effort has been to develop reliability and maintainability (R&M) models which can be used in support of the conceptual design of space transportation systems. The primary R&M model which has evolved from this research is described in Part (Volume) II of this report. Part II serves as a user and maintenance manual in support of the model. The current version of the model has been significantly updated with more recent and more accurate aircraft and shuttle reliability and maintainability parameters. Associated with the research discussed in this report are several electronic data bases (primarily in the form of EXCEL workbooks) which captures the raw and processed R&M data which was used in the R&M model.

The principle researcher for this effort is Dr. Charles Ebeling, Department of Engineering Management and Systems, School of Engineering, University of Dayton, Dayton, Ohio 45469 - 0236; phone: 937-229-2695; fax: 937-229-2698; email: cebeling@engr.udayton.edu. Comments concerning this document and the accompanying software are welcome.

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1. Introduction

The University of Dayton is pleased to submit this report to the National Aeronautics and Space Administration (NASA), Langley Research Center, which updates recently developed computer models and data bases used in determining operational capabilities and support requirements during the conceptual design of proposed space systems. This research has resulted in some revisions of the reliability and maintainability (R&M) model, the development of several electronic data bases which capture the original data used in the R&M model, the collection of more recent R&M aircraft data and the integration of new shuttle data into the electronic data base and the R&M model. Descriptions of the model updates and of the electronic data bases are the subject of this report. Other details concerning the R&M model and the O&S costing model may be found in previous reports accomplished under this grant (NASA Research Grant NAG-1-1327) which are referenced in paragraph 1.3.

1.1 Background

The current R&M Model is based upon Air Force and Navy aircraft data covering the years 1987 - 1991 and shuttle data collected in 1992 and covering missions STS-31R THROUGH STS-49. Because of the age of this data and the recent establishment of new R&M data collection systems, it was determined that more recent failure and maintenance data should be collected. Much of the current data reflects failures and technologies of the 1980s. There is a real need to update this data base with more recent aircraft and shuttle experience. Additionally, much of this data exists only in paper form making it difficult to access and use in further analysis efforts. Also, in completing a comprehensive study on specific vehicles, it became apparent that deficiencies still existed in the ability to relate design and performance goals with R&M, logistics support, and costs.

With newer and more detailed data, more accurate R&M predictions can be obtained from the model's parametric equations. Both the Air Force and the NASA contractors responsible for processing the orbiter have recently converted to newer reliability and maintainability data collection systems. The Air Force has modernized its R&M data collection system with REMIS - the Reliability and Maintainability Information System while Lockheed Martin completed a study this year that captures current shuttle R&M data updating the 1992 data base. In particular, maintainability data has been obtained from the Shop Floor Control/Data Collection (SFC/DC) system and reliability data has been obtained from the Problem Reporting and Corrective Action (PRACA) system. This research takes advantage of both of these new systems. In the process of obtaining this new data, procedures for the future collection and analysis of R&M was established.

1.2 Research Objectives

The major objectives of this research are:

a. to identify and resolve deficiencies in current methodology,
b. to further develop and update an R&M data base,
c. to enhance existing models, data, and procedures as necessary to support the study process.

1.3 References

Other reports completed as part of this research grant include:

1.3.1 "The Determination of Operational and Support Requirements and Costs During the Conceptual Design of Space Systems." Final Report. June 18, 1992.
Describes the data sources, methodology, analysis, and results of the initial parametrically generated reliability and maintainability model.

1.3.2 "Enhanced Methods for Determining Operational Capabilities and Support Costs for Proposed Space Systems." Final Report. June 1993.
Describes the integration of shuttle data, the development of the NASA WBS into 33 subsystems, numerous enhancements to the model, the (optional) addition of an external tank and liquid booster rocket, a redesign of the user interface, and compiled version of the model.

1.3.3 "Operations & Support Cost Modeling of Conceptual Space Vehicles." Annual Report. June 1993 - July 1994. Presents an initial costing model to address operations and support costs. Integrates several different aircraft life cycle cost equations with shuttle derived values and direct user input based in part upon the following:

1.3.3.1 Forbis and Woodhead, Conceptual Design and Analysis of Hypervelocity Aerospace Vehicles: Vol 3. Cost, WL-TR-91-6003, Volume 3, Boeing Military Airplanes, Jul 1991.

1.3.3.2 Isaacs, R., N. Montanaro, F. Oliver, Modular Life Cycle Cost Model (MLCCM) for Advanced Aircraft Systems-Phase III, Vol VI, Grumman Aerospace, Jun 1985.

1.3.3.3 Kamrath, Knight, Quinn, Stamps, PREVAIL: Algorithms for Conceptual Design of Space Transportation Systems, Feb 1987.

1.3.3.4 Logistics Cost Analysis Model, Advanced Manned Launch System (AMLS) Task Assignment 5, Rockwell International, Space Systems Division, September 10, 1993.

1.3.3.5 Marks, Massey, Bradley, and Lu, A New Approach to Modeling the Cost of Ownership for Aircraft Systems, RAND, Aug 1981.

1.3.4 "Integrating O&S Models During Conceptual Design - Part I," December 31, 1994.

1.3.4 "Integrating O&S Models During Conceptual Design - Part II, Reliability and Maintainability Model (RAM), User and Maintenance Manual." December 31, 1994. Provides detailed user documentation of the RAM model as well as source listings, a complete glossary, flow charts, menu hierarchy, and step by step procedures for using the model.

1.3.5 "Integrating O&S Models During Conceptual Design - Part III, Simulation of Maintenance and Logistics Support of Proposed Spaces Systems Using SLAM II." December 31, 1994. Documents the SLAM maintenance model including a complete example.

1.3.6 "O&S Analysis of Conceptual Space Vehicles," Annual report - Part I, December 31, 1995. Documents updates and changes to the RAM model and the support cost model. Develops and illustrates techniques for performing a manpower amalysis and a parametric analysis for many of the RAM model input parameters.

1.3.7 "Reliability and Maintainability Model (RAM), User and Maintenance Manual," Annual Report - Part II, December 31, 1995. Provides detailed user documentation of the current RAM model as well as source listings, a complete glossary, flow charts, menu hierarchy, and step by step procedures for using the model. Part II of this current report updates and replaces the 1995 version of the User and Maintenance Manual.

2. Model Changes and Enhancements

One of the research objectives is to enhance the R&M model as necessary to support the study process. Several enhancements and changes have been made from the baseline documented in paragraph 1.3.7.

2.1 Scheduled Maintenance

The previous modification to the model resulted in the specification of scheduled maintenance by subsystem as well as by vehicle (periodic maintenance). An option to allocate the total scheduled maintenance hours per mission to each subsystem was accomplished by using the relative weights of the subsystems. The latest update now provides an option to allocate by a fixed percentage of the unscheduled maintenance hours as well. The specified default option for scheduled maintenance hours per mission is now based upon new parametric aircraft equations which were derived from more recent R&M data. They will be applied when recomputing the model output with the scheduled maintenance selection set to "recompute" unless the option to use weight based or percent based allocations are made at the scheduled maintenance screen. If the the scheduled maintenance selection upon recomputing is set to "do not compute," then the current scheduled maintenance hours at displayed on the scheduled maintenance input screen will remain fixed. When the default option (aircraft equations) is active, those subsystems identified as "shuttle based" will use the corresponding shuttle scheduled hours. This completes the recent transition to a detailed subsystem based calculation of scheduled maintenance replacing the original vehicle level calculations.

2.2 Computation of MTBMs

In order to provide consistency in the manner in which both aircraft and shuttle mission (inherent) and ground (external) MTBMs are computed from an overall MTBM, the aircraft methodology was changed as follows:

$$\text{TOTAL MAs} = \text{MSN HRS/SPACE ADJ MTBM} + \text{GRND PROC HRS/TECH ADJ MTBM} \quad (1)$$

$$\text{MSN MTBM} = \text{MSN HRS} / (p \times \text{TOT MA}) \quad (2)$$

$$\text{GRND MTBM} = \text{GRND PROC HRS}/([1-P] \times \text{TOT MA}) \quad (3)$$

where p = the fraction of the total maintenance actions (MA) occurring during the mission time (inherent failures). The space adjusted and technology adjusted MTBMs are based upon the aircraft parametric equations which provide the initial unadjusted MTBMs. There are two differences in the way that the shuttle MTBMs are computed. First, the initial unadjusted MTBMs

are obtained from the collected shuttle data directly rather than from parametric equations. Second, the space adjustment is not applied. Therefore Equation (1) is modified as follows:

$$\text{TOTAL MAs} = \text{MSN HRS/ TECH ADJ MTBM} + \text{GRND PROC HRS/TECH ADJ MTBM} \quad (4)$$

Table 1 Summarizes the sequence of MTBM calculations:

Table 1. MTBM Calculations

Vehicle	Initial MTBM	Technology Adjustment	Space Adjustment	Total MAs	Mission MTBM	Ground MTBM
Shuttle	from data	applied	N/A	from (4)	from (2)	from (3)
Aircraft	from Eqs	applied	applied	from (1)	from (2)	from (3)

2.3 Shuttle R&M Parameters

As a result of the new shuttle data, the mean time (operating hours) between failures (MTBM), the maintenance hours per maintenance action (MHMA), removal rates (RR), and average crew sizes (CS) by subsystem were replaced. In addition, scheduled maintenance hours by subsystem were computed and incorporated into the model. This required a new file maintenance screen to display and update their values if necessary. Logic was also provided to automatically apply these values to those subsystems identified as being shuttle based. Table 2 compares the new parameters with their current values. Blanks in Table 2 indicate no data was available while zeros reflect computed values. The derivation of the shuttle R&M parameters across missons is discussed in Section 5 and was accomplished using EXCEL spreadsheets.

Table 2. Comparison of Shuttle R&M parameters

System	WBS	old-MTBM	new MTBM	old MHMA	new MHMA	old Rem Rate	new Rem Rate
Wing	1.00	3.78	141.8	21.375	34.47	.143	.22
Tail	2.00	22.25	212.5	21.375	48.26	.143	.16
Body	3.00	1.37	13.38	21.375	26.58	.143	.23
LOX	3.10	17.73	1730.5	0	30.79	.216	0
LH	3.20	15.64		0		.216	
Tiles	4.10	.129	1.37	44.1	29.68	.0073	.13
TCS	4.20	3.69	35.87	29.7	13.54	.481	.53
PVD	4.30	64.3	23.34	37.53	15.31	.391	.40
L. Gear	5.00	9999	149.55	33.255	18.16	.219	.26
Main Prop	6.00	42.12	19.86	30.42	16.54	0	.31
MPS	6.10	42.12	52.29	30.42	14.33	0	.46
RCS	7.00	13.06	80.05	71.28	21.9	.159	.35
OMS	8.00	40.31	73.42	39.645	13.48	.303	.26
APU	9.10	7.43	95.13	56.34	24.78	.443	.44
Battery	9.20	9999		0		0	
Fuel cell	9.30	30.07	85.31	64.8	12.0	.261	.45
Electrical	10.00	17.4	27.20	22.41	16.36	.088	.24
Hydraualics	11.00	5.62	60.97	33.21	15.39	.305	.37
Aero surfaces	12.00	17.27	182.62	33.255Y	26.07	.219	.17
GN&C	13.10	34.41	427.54	151.695	17.84	.392	.51
Health monitor	13.20	9999		0		0	
Comm & track	13.30	66.22	184.47	94.995	13.04	.333	.56
Controls	13.40	34.52	89.73	210.015	17.75	.466	.70
Instruments	13.50	47.2	71.82	40.14	19.66	.482	.43
Data proc	13.60	9999	297.88	61.065	18.14	0	.76
ECS	14.10	24.47	96.91	41.22	25.8	.293	.16
ECS-life support	14.20	9999	100.95	41.22	19.59	.293	.35
Personal provisions	15.00	7.2	40.97	41.13	13.10	.174	.62
Parachute	16.10	9999		0		0	
Escape system	16.20	9999	163.7	0	10.69	0	.41
Separation	16.30	11.99	84.71	58.5	23.03	.257	.51
Crossfeed	16.40	9999		27.36		0	
Docking	16.50	3108.85	1345.96	0	1.26	.219	.03
Manipulator	16.60	42.12	519.16	0	21.33	0	.21

Table 2 (continued)

System	WBS	old avg crew size	new avg crew size	scrap rate	scheduled manhours per mission
Wing	1.00	4.5	1.48	.02	148.23
Tail	2.00	4.5	1.17	.11	218.1
Body	3.00	4.5	1.37	.03	3226.41
LOX	3.10	9	2.06	0	150.48
LH	3.20	9			
Tiles	4.10	4.5	1.81	.05	1841
TCS	4.20	4.5	1.51	.19	1456
PVD	4.30	4.5	1.29	.07	487.3
L. Gear	5.00	4.5	1.55	.10	1603
Main Prop	6.00	9	1.21	.07	3712
MPS	6.10	9	2.09	.08	11120
RCS	7.00	9	1.23	.03	1343
OMS	8.00	4.5	1.18	.04	1961
APU	9.10	9	1.19	.14	672.8
Battery	9.20	4.5			
Fuel cell	9.30	4.5	1.20	0	912.8
Electrical	10.00	4.5	1.16	.04	431.5
Hydraualics	11.00	9	1.22	.10	379.6
Aero surfaces	12.00	4.5	1.38	.06	71.09
GN&C	13.10	4.5	1.17	.04	88.19
Health monitor	13.20	4.5			
Comm & track	13.30	4.5	1.40	.02	540.3
Controls	13.40	4.5	1.18	.02	179.5
Instruments	13.50	9	1.24	.07	722.7
Data proc	13.60	4.5	1.17	0	164.2
ECS	14.10	9	1.42	.08	404.4
ECS-life support	14.20	9	1.19	.11	411.7
Personal provisions	15.00	4.5	1.37	.01	2598
Parachute	16.10	4.5			
Escape system	16.20	4.5	1.15	.01	514.6
Separation	16.30	9	1.13	.15	243
Crossfeed	16.40	4.5			
Docking	16.50	4.5	1.99	.02	
Manipulator	16.60	4.5	1.85	.05	763

2.4 Aircraft Equations

Based upon REMIS data collected for the 1995 calendar year at the aircraft mission-design (MD) level, over 160 new multiple regression equations were derived and entered into the RAM model. NCSS was the statistical package used for performing the regression analysis. As was the case in the derivation of the original equations, individual independent (driver) variables were included or excluded based upon their statistical significance as measured by the student t-statistic (or equivalently the prob-value). The overall model was evaluated based upon the cofficient of determination (R^2) or its square root, the index of fit (R). The candidate independent variables were identical to those used in the original equations except, where necessary, they were averaged across each mission-design-series (MDS) comprising an MD. New equations were derived for the following R&M parameters:

Flying Hours Between Maintenance Actions (FHBMA)
Maintenance Hours per Maintenance Action (MHMA)
Removal Rate (fraction removed per maintenance action) (RR)
Fraction Off Equipment (fraction of total maintenance actions performed off vehicle) (POFF)
Average Crew Size (CS)
Scheduled maintenance hours per operating hour (SP)

The original model contained only average crew sizes with no parametric equations. Therefore these equations are new to the R&M model and required some additional software modifications to incorporate them into the model. The fraction of the total failures which are inherent equipment failures was updated using the 1995 data. As was the case in the previous version of the RAM model, there were no regression equations derived for this parameter since the total failures themselves are determined parametrically based upon the FHBMA. Scheduled maintenance hours per operating hour equations are new and a new module (SCHED) was created which evaluates these equations during recomputations. Critical failure rate (i.e. abort rate) equations were not updated since this parameter was not available within the REMIS system. Individual equations and their statistical analyses are found in Appendix A. The regression data points (both independent and dependent variables) are included in the electronic data bases (MD95.XLS) discussed in the following section.

3. Electronic Data Bases

One primary tasking of this research effort consisted in providing current data in electronic form and obtaining more recent R&M data also in electronic form. All data in electronic form are either in EXCEL workbooks or in a MICROSOFT data base system called ACCESS. Some EXCEL workbooks can be imported into the ACCESS data base. Therefore, certain data will reside in two places but in different formats. These data files are discussed further in Sections 4 and 5. The primary EXCEL (.xls) data files consist of:

Table 3. EXCEL Data Files

File Name	Original File Date - Size	Decsription
MASTERWU.XLS	9/17/96 - 228,864	Contains the original (1988-1989) R&M data by WUC (worksheets) and by aircraft.
MODASAIR.XLS	9/9/96 - 809,984	Contains more recent (1990-1991) MODAS data for selected aircraft with worksheets by AIRCRAFT and by month.
MODASWUC.XLS	9/9/96 - 848,384	Same data as AIRCRAFT.XLS except worksheets are by WUC.
B1BDATA.XLS	9/23/96 - 730,112	Contains recent (Jan-May 96) REMIS MTBM data at the detailed (5-digit) WUC level for the B1B aircraft.
F16ADATA.XLS	9/23/96 - 552,960	Contains recent (Jan-May 96) REMIS MTBM data at the detailed (5-digit) WUC level for the F-16 aircraft.
MDyr.XLS where yr = 92, 93, 94, 95, or 96	9/4/96 92: 496,128 93: 529,408 94: 464,384 95: 467,456 96: 455,680	Contains R&M parameters computed from REMIS data for the year indicated. Data is summarized at the MD level and at the 2-digit WUC.
UNSDDATA.XLS	8/30/96 - 603,648	Contains shuttle unscheduled maintenance data obtained from Lockheed-Martin study organized by subsystem.
SCHEDATA.XLS	8/25/96 - 330,752	Contains shuttle scheduled maintenance data obtained from Lockheed-Martin study organized by subsystem.

4. Aircraft Reliability and Maintainability Data

4.1 REMIS Aircraft Data Workbooks for Years 1992-1996

The REMIS system was used to obtain reliability and maintainability data for Air Force aircraft for the years 1992 through June 1996. This data has been used to calculate the reliability and maintainability (R&M) parameters used in the Reliability and Maintainability Model (RAM). All of the data are contained in six Microsoft™ Excel 5.0 Workbooks: md92.xls, md93.xls, md94.xls, md94.xls, md95.xls, and md96.xls (January through June). Each of these workbooks can be imported into the Reliability and Maintainability Database (ACCESS) software for additional analysis.

All of the workbooks are identical in format. The first sheet is the REMIS INFO sheet. This sheet lists the various aircraft, work unit codes (WUC), and dates for which the REMIS database was searched. The aircraft and WUCs are the same for all of the workbooks; only the dates are different.

The second sheet is the Definition sheet. The REMIS data was collected at the two-digit Work Unit Code (WUC) level for various aircraft. These WUCs are defined at the left of this sheet[1]. The independent variables used in the regression analysis of the R&M data are defined down the right side of this sheet. The REMIS data was collected for several R&M parameters such as number of maintenance actions (TOT MA). These parameters are defined beneath the WUC and independent variable definitions. The REMIS data was then used to calculate additional R&M parameters such as maintenance hours per maintenance actions (MHMA). These parameters are defined at the bottom of the sheet.

The next three sheets are the IndepVars (Independent Variables) sheets. These sheets list the values of the independent variables used to analyze the R&M data in establishing the regression equations used in RAM. The variables have been separated onto three sheets so that the variables can be read without having to scroll the screen.

The weights of the aircraft subsystems specified by the two-digit WUCs are listed on the WUC Weights sheet. General operating information such as number of operating hours, number of aircraft, and support general scheduled hours (sg_sch_hours) for all of the aircraft are entered in the OperInfo sheet.

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[1] The data for WUC55 was not retrieved from REMIS. The WUC55 sheet is a 'dummy' sheet so that the workbook can be imported into the database software. Data for WUC65 was retreived from REMIS. Due to the implementation of the database, this WUC data will not import into the database.

Next are the sheets which list the R&M data. There is one sheet per WUC, and all sheets have the same format. An example sheet is listed in Figure 1. Left of the vertical double lines are the R&M parameters calculated from the REMIS data. Below the single horizontal line are summary statistics for these parameters. To the right of the vertical double lines are the raw REMIS data and the 'formulas' used to calculate the R&M parameters.

The spreadsheet format left of the vertical pair of lines is required by the R&M Database (ACCESS) software and cannot be changed. The aircraft are listed down the leftmost column under the heading VEHICLE. The next ten columns contain the R&M parameters for the various aircraft. The headings of the columns specify the R&M parameters for which data is available. Data for abort rate (ARATE) could not be found in the REMIS database so there are no data in that column. There are also no data in the RESERVE column by design[2]. The summary statistics beneath the R&M parameter data are simple average (mean) and standard deviation (STD DEV).

The raw REMIS data is to the right of the vertical pair of lines. Next to the REMIS data, delineated by a single vertical line, is another copy of the R&M parameters which were calculated from that data. The R&M parameter values are the same as those at the left side of the workbook. However, this copy has the actual formulas used to calculate the R&M parameter values. Highlighting any cell causes the formula used to calculate the data value in that cell to be displayed at the top of the sheet. These formulas are addressed in the following paragraphs.

The first R&M parameter is flying hours between unscheduled maintenance actions. It is calculated by dividing the total operating time (flying hours) by the total number of maintenance actions.

$$FHBMA = \frac{OpTime}{TotMA}$$

[2] This column is a space holder for an additional R&M parameter which may be included at a future time. The R&M Database software is designed to read from spreadsheets with fixed formats. Therefore a blank column was added to the spreadsheets too retain some flexibility in using the R&M Database software.

Figure 1. Example EXCEL WUC spreadsheet

WUC23

VEHICLE	ARATE	FHBMA	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	RESERVE	SCH MH/FH		TOT	INH	REMS DATA NBR	ON-VEH	OFF-VEH	SCHED			
											MID	MA	MA	REM	HRS	HRS	HRS	MRT	OP_TIME	SORTIES
A010		14 71	7 48	0 03	0 32	7 68	1 29	0 28		0 09	A010	8 401	2378	2712	60,743 20	2,137 90	11,690 00	5 81	123,547 70	64 507
B001		2 88	4 77	0 10	0 30	0 66	1 28	0 23		0 13	B001	9,144	2099	2784	39,132 00	4,487 90	3,457 50	3 74	26 319 30	6 021
B002		3 34	6 16	0 03	0 12	0 72	1 10	0 13		0 94	B002	864	108	104	5,150 80	174	2,721 70	5 62	2,881 60	619
B052		2 75	5 05	0 00	0 26	0 43	1 17	0 29		0 52	B052	9,081	2615	2343	45,704 40	110 6	13,063 70	4 32	24,948 20	3,943
C005		1 10	4 54	0 13	0 19	0 29	1 24	0 22		0 80	C005	58,893	13113	10970	########	35,960 80	51,914 60	3 67	64,824 70	17,369
C009		15 81	4 38	0 01	0 24	10 94	1 08	0 25		0 09	C009	1,637	406	391	7,083 70	87	2,249 40	4 06	25,879 20	17,909
C010		18 93	5 83	0 03	0 33	3 89	1 11	0 38		0 03	C010	2,488	949	811	14,047 60	455 2	1,369 30	5 24	47,106 50	9,668
C130											C130								281,813 70	119,494
C135		10 23	5 66	0 02	0 13	2 60	1 15	0 18		0 23	C135	21,778	3822	2838	########	2,730 40	52,227 80	4 93	222,886 00	56,637
C141		2 40	4 76	0 14	0 31	0 76	1 24	0 36		0 52	C141	86,438	23604	20751	########	44,039 80	82,250 00	3 85	159,592 80	50,387
E003		11 51	5 20	0 04	0 23	0 61	1 21	0 21		0 10	E003	3,660	1209	1126	18,261 70	764 6	4,149 10	4 25	42,117 00	5,958
E004		2 31	5 69	0 00	0 23	0 61	1 22	0 33		0 46	E004	744	158	171	4,234 70	0 2	785 3	4 71	1,715 10	451
F004		12 18	9 05	0 04	0 50	8 52	1 55	0 21		0 06	F004	1,751	802	869	15,202 70	635 7	1,247 40	5 84	21,328 90	14,912
F015		6 86	8 02	0 03	0 38	4 43	1 38	0 26		0 08	F015	29,525	7815	11304	########	7,080 50	16,676 30	5 8	202,394 70	130,918
F016		26 23	10 19	0 03	0 33	18 27	1 48	0 20		0 04	F016	15,738	3220	5220	########	5,135 10	17,654 90	6 89	412,800 00	287,609
F111		7 75	11 51	0 27	0 49	3 18	1 52	0 48		0 20	F111	3,597	1713	1754	30,101 50	11,298 50	5,708 40	7 55	27,871 50	11,443
F117		21 07	7 58	0 02	0 81	12 33	1 34	0 62		0 06	F117	630	392	513	4,674 80	100	760	5 64	13,274 20	7,765
T001		56 23	6 22	0 00	0 51	24 63	1 32	0 48		0 01	T001	735	350	372	4,570 80	0 6	400 7	4 72	41,326 40	18,103
T038		12 97	4 80	0 12	0 42	11 26	1 65	0 35		0 04	T038	11,581	4088	4849	48,743 00	6,791 20	6,547 90	2 91	150,167 00	130,386
T043		43 40	4 56	0 01	0 27	14 93	1 14	0 35		0 01	T043	188	66	50	852	4 5	85 5	4	8,158 80	2,807
U002		9 63	5 68	0 03	0 34	4 28	1 33	0 18		0 48	U002	573	105	197	3,150 40	106 8	2,624 20	4 26	5,518 50	2,451
average		14 11	6 36	0 06	0 34	6 60	1 29	0 31		0 25										
std dev		14 16	2 01	0 07	0 16	6 87	0 16	0 12		0 28										

Unscheduled maintenance hours per maintenance action is calculated by dividing the sum of the on-vehicle and off-vehicle maintenance hours by the total number of maintenance actions.

$$MH / MA = \frac{OnVehHrs + OffVehHrs}{TotMa}$$

The percentage of unscheduled maintenance hours performed off-vehicle is calculated by dividing the number of off-vehicle hours by the sum of the on-vehicle and off-vehicle maintenance hours.

$$PctOff = \frac{OffVehHrs}{OffVehHrs + OnVehHrs}$$

The removal rate is the percent of total maintenance actions for which a removal was required. It is calculated by dividing the number of removals by the total number of maintenance actions.

$$RemRat = \frac{NbrRem}{TotMA}$$

Sorties between unscheduled maintenance actions is calculated by dividing the total number of sorties by the total number of maintenance actions.

$$SBMA = \frac{Sorties}{TotMA}$$

The crew size to perform unscheduled maintenance is calculated by dividing the R&M parameter MH/MA by the REMIS mean repair time (MRT).

$$CREW = \frac{MH / MA}{MRT}$$

The fraction of unscheduled maintenance actions resulting from inherent equipment failures is calculated by dividing the number of inherent maintenance actions by the total number of maintenance actions.

$$PctInher = \frac{InhMA}{TotMA}$$

The last R&M parameter is percent scheduled maintenance hours per flying hours. It is calculated by dividing the number of scheduled maintenance hours by the total operating hours (flying hours).

$$SchMH / FH = \frac{SchedHrs}{OpTime}$$

After all of the WUC data sheets, there are four sheets which are regression analysis templates. The first sheet is for single variable linear regression analysis. The remaining three sheets are for 2 variable, 3 variable, and 4 variable linear regression analysis respectively. Refer to Section 4.5 on how to perform regression analysis using Excel for more information.

The final sheet in the workbook is the REMIS data as imported directly from the REMIS system file. This data has been left in the workbook as a backup to the data in the WUC sheets and as a source of data for additional analysis.

4.2 REMIS DETAIL DATA FOR F16A & B1B

Reliability and maintainability data for five digit work unit codes was retrieved from the REMIS system for the F16A and B1B aircraft. The data is contained in two Microsoft™ Excel 5.0 Workbooks named *F16ADATA.DOC* and *B1BDATA.DOC*.

The two workbooks are identical in format. All of the data for an aircraft is presented in the first sheet. The top of the sheet is the header from the REMIS report. Below the header is the REMIS data. The format of the data is as follows:

Figure 2. REMIS Detail Data Format

WUC	WUC DEFINITION	MTBM	INHERENT	INDUCED	NO DEFECT	TOTAL CORRECT	PREVENT
110							
11000		8	124.2	14	26.5	7.9	
11A							
11A00	DOORS	44	657.5	99.8	159.7	43.8	
11A99	NOC	5.7	96.4	15.1	15.5	5.7	5589.1
11AA0	ENTRY DOOR & LADDER	103.5	859.9	228.1	414	102.6	11178.2

The left column of the sheet lists the work unit codes (WUCs). The second column lists the definition of the WUCs. These definitions were not retrieved from REMIS. They were obtained from existing data files which were downloaded from the MODAS system during a previous work effort. The next six columns list the maintainability and reliability data. They are defined as follows:

MTBM: mean operating time (flying hours) between maintenance actions
INHERENT: mean operating time (flying hours) between inherent failures
INDUCED: mean operating time (flying hours) between induced failures
NO DEFECT: mean operating time (flying hours) between no defects found
TOTAL CORRECTIVE: mean operating time (flying hours) between corrective maintenance
PREVENTATIVE: mean operating time (flying hours) between preventive maintenance

4.3 Original Aircraft Reliability and Maintainability Data Spreadsheet

The original RAM R&M data is contained now in a Microsoft™ Excel 5.0 Workbook (MASTERWU.XLS). The workbook is comprised of many individual sheets. The sheets contain the aircraft reliability and maintainability (R&M) parameters and data used in the original Reliability and Maintainability Model (RAM). The data were obtained from the published report titled "AFALC Pamphlet 800-4, Volume V, October 1985-September 1987" and were entered into the spreadsheet manually.

The first sheet is the Definition sheet. The R&M data was collected at the two-digit Work Unit Code (WUC) level for various aircraft. These WUCs are defined at the left side of this sheet. The independent variables used in the regression analysis of the R&M data are defined down the right side of this sheet. The data was collected for various R&M parameters such as maintenance hours per maintenance actions (MHMA). These parameters are defined at the bottom of this sheet.

The next three sheets are the IndepVars (Independent Variables) sheets. These sheets list the values of the independent variables used to analyze the R&M data to establish the regression equations used in RAM. The variables have been separated onto three sheets so that the variables can be read without having to scroll the screen.

The weights of the aircraft subsystems specified by the two-digit WUCs are listed on the WUC Weights sheet.

The remaining sheets list the R&M data. There is one sheet per WUC, and all of the sheets have the same format[3]. An example sheet is in Figure 3. The aircraft are listed down the leftmost column under the heading VEHICLE. The next ten columns contain the R&M data for the various aircraft. Definitions of these parameters are at the bottom of the Definition sheet. The average and standard deviation of the data is calculated for each parameter. Some sheets have columns to the right of the R&M data after a blank column. These columns list independent variables which are unique to the particular WUC. Note that the after the last WUC there a sheet just for the avionics system.

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[3] The format of the sheets is fixed so that the data can be imported into the Access Database program.

Figure 3. Example WUC Spreadsheet of MASTERWU.XLS

WUC14

VEHICLE	ARATE	FHBMA	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	RESERVE	SCHD MH
A-4E		3.93	4.8							
A-4F		2.76	2.3							
A-6E		4.28	6.1							
A-7D		14.56	10.6	0.15		9.904		0.673		
A-7E		7.28	6.5							
A-10A		17.14	6	0.13		10.34		0.63		0.35
B-52G	0	7.08	5.7	0.18		1.051		0.396		0.8
FB-111A		4.36	6					0.405		1.31
F-106A		22.49	9.7	0.076		15.19				0.33
F-111A		6.02	9.9	0.16	0.429	2.755		0.444		1.33
F-111D		7.21	9.3	0.145		3.193				
F-111F	0.042	9.61	9.6	0.066		4.07		0.488		
F-4C		9.35	11.3	0.04		7.689				
F-4D	0.059	9.8	9.8	0.06		6.443				1.37
F-4E	0.077	9.65	11.9	0.13		7.918		0.478		
F-5E		21.7	11.4	0.22		23.01		0.498		0.55
F-14A		4.48	8.7							
F-15A	0.035	12.95	10.9	0.08		9.808		0.402		0.99
F-15C	0.036	14.35	15.1	0.08	0.39	10.81				
F-16A	0.068	15.53	7.3	0.2		11.56		0.371		0.46
F-16B		14.34	5.8	0.16		10.67				
F-18A		7.47	9							
C-130B	0.009	14.38	6.6			6.083		0.556		0.47
C-130E	0.005	18.94	7.3	0.04	0.247	7.853		0.514		
C-130H	0.008	18.32	9.4	0.027		6.589		0.585		
KC-135A	0.001	6.6	6.3	0.19		1.636		0.421		0.99
C-140A		11.8	7.7	0.12		6.306		0.391		0.44
C-141B		6.8	6.5	0.064	0.263	2.09				1.06
C-2A		8.57	8.6							
C-5A		3.8	6.3	0.095	0.131	0.965		0.277		1.55
C-9A		21.98	3.9	0.09		17.86		0.451		0.24
KC-10A	0.005	52.1	6.1	0.047		11.95		0.355		0.14
E-2C		6.7	6.5							
EA-6B		4.24	7.9							
T-38A		17.53	8.9	0.29	0.363	14.67		0.524		0.52
E-3A		4.78	2.1	0.07		0.583				0.46
AVERAGE	0.0288	11.747	7.828	0.1164	0.30383	8.116		0.466263		0.742222
STD DEV	0.028	9.0089	2.705	0.06583	0.11078	5.584		0.099294		0.440007

The last for sheets in the workbook are regression analysis templates. The first sheet is for single variable linear regression analysis. The remaining three sheets are for 2 variable, 3 variable, and 4 variable linear regression analysis respectively. Refer to Section 4.5 of this report on how to perform regression analysis using Excel for more information.

4.4 MODAS Aircraft Data Spreadsheets

Aircraft abort, failure, and maintenance data for the years 1990 and 1991 obtained electronically from the MODAS system are summarized in two Microsoft™ Excel 5.0 Workbooks. The *MODASAIR.XLS* workbook summarizes the data by aircraft, and the *MODASWUC.XLS* workbook summarizes the data by Work Unit Code (WUC).

MODASAIR.XLS Workbook

Monthly maintenance, failure, abort and data was retrieved electronically from the MODAS system by WUC for various aircraft. The *MODASAIR.XLS* workbook contains the original monthly data as well as summary data.

The workbook begins with a sheet, WUCdefs, listing the WUCs for which data was obtained and their definitions. The second sheet is a roll-up summary, by aircraft, of all of the MODAS data. Each row of the summary data is the total of the 1990-1991 monthly maintenance, failure, abort data across all WUCs for an aircraft. This data is calculated from the original MODAS data.

The remaining sheets in the workbook contain the original MODAS data as well as some summary information. There is one sheet for each aircraft and each sheet is identical in format. Each sheet is divided into three sections by horizontal vertical lines. The bottom section is the original data as retrieved from MODAS. There is one block of data for each WUC. The block lists the monthly maintenance, failure, and abort data for that WUC throughout 1990-1991. At the bottom of the block, totals and average are calculated. These totals are the maintenance, failure, and abort data for a WUC over the entire two year period.

The middle section of the sheet lists these totals again (the WUC totals from the bottom section) to form a comprehensive summary of the data by WUC. An example WUC totals (middle section) for the F111E is displayed in Figure 4. The meaning of the column headings should be clear except for T1, T2, and T6. T1 refers to inherent equipment failures, i.e., failures from design or manufacturing anomalies. T2 represents induced failures, i.e., failures from improper maintenance procedures, foreign objects, etc. Any reported failure which cannot be found or duplicated is recorded against T6.

The top section of each spreadsheet is a roll-up of the middle section. It is the total maintenance, failure, and abort data for the aircraft over the two year period. Note that this line of data is simply copied into the Summary sheet.

MODASWUC.XLS Workbook

The same monthly maintenance, failure, abort and data as in the *MODASAIR.XLS* workbook is summarized by WUC (instead of aircraft) in the *MODASWUC.XLS* workbook.

The workbook begins with the same WUC definitions sheet as is in the *MODASAIR.XLS* workbook. The second sheet is a roll-up summary, by WUC, of all of the MODAS data. Each row of the summary data is the total of the 1990-1991 monthly maintenance, failure, abort data across all aircraft for a WUC. This data is calculated from the original MODAS data.

The remaining sheets in the workbook contain the original MODAS data as well as some summary information. There is one sheet for each WUC and each sheet is identical in format. Each sheet is divided into three sections by horizontal vertical lines. The bottom section is the original data as retrieved from MODAS. There is one block of data for each aircraft. The block lists the monthly maintenance, failure, and abort data for that aircraft throughout 1990-1991. At the bottom of the block, totals and average are calculated. These totals are the maintenance, failure, and abort data for an aircraft over the entire two year period.

The middle section of the sheet lists these totals again (the aircraft totals from the bottom section) to form a comprehensive summary of the data by aircraft. An example aircraft totals (middle section) for WUC11 is displayed in Figure 5.

The top section of each spreadsheet is a roll-up of the middle section. It is the total maintenance, failure, and abort data for the WUC over the two year period. Note that this line of data is simply copied into the Summary sheet.

Figure 4. Example MODAS Data Organized by Aircraft

F111E

MDS: F111E AIRCRAFT MAINTENACE TOTAL

WUC	Flt Hrs	Sorties	Maintenance Manhours			AVG MMHTR	On Equipment Failures				Abort Count	
			On-Eq	Off-Eq	On-Eq Evts		T1	T2	T6	Removals	Air	Ground
TOTAL:	39341	15796	327166	77908	41689	6 19	12766	1485	12045	11910	96	534

MDS: F111E TOTALS

WUC	Flt Hrs	Sorties	Maintenance Manhours			AVG MMHTR	On Equipment Failures				Abort Count	
			On-Eq	Off-Eq	On-Eq Evts		T1	T2	T6	Removals	Air	Ground
11	39341	15796	80371	5263	14857	4 73	1747	636	3174	1219	9	20
12												
13	11664	15796	7063	1158	841	5 40	426	16	310	466	9	51
14	39341	15796	68030	9375	4713	10 89	1769	132	1567	1474	13	134
16	39341	15796	16489	486	1832	7 34	359	23	791	550	0	7
41	39341	15796	32896	7224	3316	7 99	1172	320	1149	1441	11	48
42	39341	15796	15014	11408	1961	6 52	670	38	637	672	9	50
44	39341	15796	12844	5482	2022	5 41	873	27	236	868	0	15
45	39341	15796	23943	6721	3967	5 64	912	152	758	790	9	65
47	39341	15796	8650	1982	991	6 21	373	63	475	433	0	2
51	39341	15796	22282	6214	2665	6 62	1694	32	1065	1730	15	47
52	39341	15796	24238	14900	1631	12 14	1032	6	1206	1272	16	82
61	39341	15796	2011	967	376	4 84	173	3	132	104	0	0
62	39341	15796	58	0	46	0 65	4	2	3	2	0	0
63	39341	15796	6749	3157	1169	4 90	844	20	256	470	5	3
64	39341	15796	3583	1579	845	4 05	452	10	146	259	0	10
71	39341	15796	2945	1992	457	5 78	266	5	140	160	0	0
72												

MDS/WUC = F111E /11***

Date	Flt Hrs per Month	Sorties per Month	Maintenance Manhours			MMHTR	On Equipment Failures				Abort Count	
			On-Eq	Off-Eq	On-Eq Evts		T1	T2	T6	Removals	Air	Ground
1 90	1390	551	5041	294	827	5 45	113	18	124	70	0	0
2 90	1042	404	2998	194	523	4 85	64	15	159	47	0	1
3 90	1675	714	4706	341	730	5 93	93	8	134	57	0	0
4 90	1513	596	4604	354	788	5 05	106	98	193	90	0	0
5 90	2049	800	4255	279	726	4 81	152	105	276	127	0	0
6 90	2045	796	3788	64	574	5 06	125	49	151	82	0	0
7 90	1785	733	3345	44	505	5 54	54	91	129	30	1	2
8 90	1847	804	3880	132	425	8 26	23	30	144	6	0	0
9 90	1260	481	0	0	0	0 00	0	0	0	0	0	0
10 90	3220	1276	2971	27	440	5 49	51	22	142	2	1	2
11 90	1495	586	3454	57	538	4 69	36	4	147	12	0	1
12 90	1249	515	1919	11	286	5 26	25	6	63	2	1	1
1 91	1477	593	3054	222	385	7 06	38	17	95	10	0	2
2 91	1673	607	2449	78	442	4 70	27	4	64	13	0	0
3 91	1369	510	3268	116	498	5 53	56	22	168	34	0	2
4 91	1681	661	4002	363	775	4 48	67	10	182	38	4	0
5 91	1838	751	2906	122	629	4 26	49	6	140	45	0	1
6 91	2015	832	3918	187	765	4 99	81	24	141	75	1	1
7 91	1485	621	5735	325	1374	3 81	121	24	140	94	1	2
8 91	1634	705	3103	376	749	4 00	75	2	78	49	0	1
9 91	1397	586	3259	234	714	4 59	97	18	97	84	0	1
10 91	1812	732	3100	784	950	3 04	122	22	181	102	0	1
11 91	1182	469	2545	419	650	3 22	85	16	114	73	0	2
12 91	1208	473	2071	240	564	3 48	87	25	112	77	0	0
TOTAL	39341	15796	80371	5263	14857		1747	636	3174	1219	9	20
AVERAGE						4 73						

Figure 5. Example MODAS Data Organized by WUC

WUC11

WUC: 11 MAINTENACE TOTAL												
			Maintenance Manhours				On Equipment Failures				Abort Count	
WUC	Flt Hrs	Sorties	On-Eq	Off-Eq	On-Eq Evts	AVG MMHTR	T1	T2	T6	Removals	Air	Ground
11	7115958	1035319	1548465	68636	326417	4.19	61951	8227	62527	31099	176	798

WUC: 11 MAINTENANCE TOTALS PER AIRCRAFT												
			Maintenance Manhours				On Equipment Failures				Abort Count	
Aircraft	Flt Hrs	Sorties	On-Eq	Off-Eq	On-Eq Evts	AVG MMHTR	T1	T2	T6	Removals	Air	Ground
F111E	39341	15796	80371	5263	14857	4.73	1747	636	3174	1219	9	20
F15A	129873	101041	208788	4922	47980	3.85	6233	969	5886	2356	19	184
F15B	24718	18882	40871	559	10668	3.58	1534	306	970	470	4	18
F15C	240171	148519	254434	15213	45317	4.92	5825	1401	8099	3235	18	124
F15D	31107	22729	51450	1696	9037	5.24	1140	245	1388	550	1	20
F15E	68293	36337	30726	670	7463	3.62	756	211	1430	332	4	28
F16A	260221	189708	233846	5034	39276	5.30	4976	592	10276	2247	28	126
F16C	5874933	328229	158786	7197	32167	4.07	5630	1085	5126	3325	39	123
F4E	78394	63450	95236	4127	19875	4.25	5255	766	1820	3322	20	74
F4G	57301	36306	29521	1074	6937	3.90	1989	180	394	1206	6	34
KC135A	132527	32331	209802	18947	49665	3.55	15151	1130	13784	8142	14	27
KC135R	179079	41991	154634	3934	43175	3.31	11715	706	10180	4695	14	20

MDS/WUC = F111E /11***												
	Flt Hrs	Sorties	Maintenance Manhours				On Equipment Failures				Abort Count	
Date	per Month	per Month	On-Eq	Off-Eq	On-Eq Evts	MMHTR	T1	T2	T6	Removals	Air	Ground
1 90	1390	551	5041	294	827	5.45	113	18	124	70	0	0
2 90	1042	404	2998	194	523	4.85	64	15	159	47	0	1
3 90	1675	714	4706	341	730	5.93	93	8	134	57	0	0
4 90	1513	596	4604	354	788	5.05	106	98	193	90	0	0
5 90	2049	800	4255	279	726	4.81	152	105	276	127	0	0
6 90	2045	796	3788	64	574	5.06	125	49	151	82	0	0
7 90	1785	733	3345	44	505	5.54	54	91	129	30	1	2
8 90	1647	804	3880	132	425	8.26	23	30	144	6	0	0
9 90	1260	481	0	0	0	0	0	0	0	0	0	0
10 90	3220	1276	2971	27	440	5.49	51	22	142	2	1	2
11 90	1495	586	3454	57	538	4.69	36	4	147	12	0	1
12 90	1249	515	1919	11	286	5.26	25	6	63	2	1	1
1 91	1477	593	3054	222	385	7.06	38	17	95	10	0	2
2 91	1673	607	2449	78	442	4.7	27	4	64	13	0	0
3 91	1369	510	3268	116	498	5.53	56	22	168	34	0	2
4 91	1681	661	4002	363	775	4.48	67	10	182	38	4	0
5 91	1838	751	2906	122	629	4.26	49	6	140	45	0	1
6 91	2015	832	3918	187	765	4.99	81	24	141	75	1	1
7 91	1485	621	5735	325	1374	3.81	121	24	140	94	1	2
8 91	1634	705	3103	376	749	4	75	2	78	49	0	1
9 91	1397	586	3259	234	714	4.59	97	18	97	84	0	1
10 91	1812	732	3100	784	950	3.04	122	22	181	102	0	1
11 91	1182	469	2545	419	650	3.22	85	16	114	73	0	2
12 91	1208	473	2071	240	564	3.48	87	25	112	77	0	0
TOTAL	39341	15796	80371	5263	14857		1747	636	3174	1219	9	20
AVERAGE						4.73						

4.5 Regression Analysis Using Excel

The REMIS data workbooks and original data workbook all have four sheets at the end of the workbooks which are templates for performing regression analysis on the data within the workbooks. The four templates are for single-variable, two-variable, three-variable, and four-variable regression analysis respectively. The methodology for performing regression analysis will be explained by working through examples of single-variable and two-variable regression.

Single-Variable Regression

The template for single variable regression consists of a data section and a calculation section. The data section is displayed in Figure 6a , and the calculation section is displayed in Figure 6b.

Figure 6a: Data Section of Single-Variable Template

	A	B	C	E	F
1		**Y**	**X1**	**LOG X1**	**SQRT X1**
2	VEHICLE	MH/MA	DRY_WGT		
3	A010	5.12	20822	4.3185	144.2983
4	B052	2.90	152293	5.1827	390.2474
5	F111	3.32	44341	4.6468	210.5730
6	F004	3.24	29663	4.4722	172.2295
7	F015	2.71	27425	4.4381	165.6050
8	F016	3.39	14447	4.1598	120.1957
9	C130	2.96	73962	4.8690	271.9596
10	C135	4.16	97030	4.9869	311.4964
11	C141	4.13	140882	5.1489	375.3425
12	C005	7.92	320083	5.5053	565.7588
13	C009	13.73	61790	4.7909	248.5759
14	C010	3.66	240613	5.3813	490.5232
15	T038	4.44	6673	3.8243	81.6884
16	E003	6.86	188000	5.2742	433.5897
17	B001	6.43	186234	5.2701	431.5484
18	F117	2.67	29500	4.4698	171.7556
19	T043	4.02	64000	4.8062	252.9822

Figure 6b: Calculation Section of Single-Variable Template

	X1	b
Coef	1.4876	-2.3324
Se	1.4628	7.0484
r^2	0.0645	2.7574
F	1.0342	15.0000
SSreg	7.8637	114.0499

Data is copied from WUC and IndepVars sheets into the data section of the template. First the complete list of vehicles is copied into the cells beneath the vehicle heading. Next the dependent variable values from the desired WUC sheet are copied into the cells under the Y heading. Lastly the independent variable values from an IndepVars sheet are copied into the cells beneath the X1 heading. It is very important that the vehicles get copied for each analysis because any vehicle for which data is not available must be deleted from the data section. The regression equation cannot compensate for missing data. If new independent or dependent variable values are copied into the data section without copying the list of vehicles, the data will not line up correctly.

To the right of the vertical double lines in the middle of the data section, are additional columns which can be used to transform the independent variable data. Transformation of the independent variable may result in an improved fit. In this example, the logarithm and square root of the independent variable data are calculated and displayed.

The formula to calculate the regression statistics is

$$\text{LINEST}(Y1_{start}:Y1_{end},X1_{start}:X1_{end},\text{TRUE},\text{TRUE}) \ .$$

LINEST performs a linear regression of the data in the cell ranges specified in the equation. The first parameter of the equation is the range of cells containing the dependent variable values. The second parameter of the equation is the range of cells containing the independent variable values. Detailed information about this formula can be found in Excel's help menu.

For the specific example considered above, the regression equation for X1 is

$$\text{LINEST}(A3:A19,B3:B19,\text{TRUE},\text{TRUE}) \ .$$

Whereas, the equation for the square root transformation of X1 is

$$\text{LINEST}(A3:A19,F3:F19,\text{TRUE},\text{TRUE}) \ .$$

The results of the evaluation of the LINEST equation are in the calculation section. Across the top and along the left side of the calculation section are simple text labels to identify to regression results. The results are the numerical values as displayed in the above figure. The results are an **array** of values. LINEST always returns an array of values. To enact a change in the regression equation, simply highlight a cell in the array, make the desired change, and then press CTRL&SHT&ENTER.

Two-Variable Regression

Two-variable regression differs from single variable regression only in the specification of the independent variable cell ranges. The second parameter of the LINEST equation must always be a continuous range of cells. Therefore, for all multiple regression analysis the independent variables, either untransformed or transformed, must be copied next to one another as a continuous block of cells. An example data section and a calculation section for two-variable regression are presented in Figures 7a and 7b.

Figure 7a. Data Section for Two-Variable Template

	A	B	C	D	E	F	G
1		**Y**	**TRANS X1**	**TRANS X2**		**RAW X1**	**RAW X2**
2	VEHICLE	MH/MA	X2	LN X2		DRY_WGT	#CTRL SUR
3	A010	5.12	14	2.6391		20822	14
4	B052	2.90	14	3.4657		152293	32
5	F111	3.32	23	3.3322		44341	28
6	F004	3.24	26	2.8332		29663	17
7	F015	2.71	26	2.0794		27425	8
8	F016	3.39	23	2.3979		14447	11
9	C130	2.96	42	2.6391		73962	14
10	C135	4.16	31	3.1781		97030	24
11	C005	7.92	31	3.7612		320083	43
12	C009	13.73	31	2.9957		61790	20
13	C010	3.66	31	3.9512		240613	52

Figure 7b. Calculation Section for Two-Variable Template

	X2	X1	b
	LN X1	X1	
Coef	6.081	-0.220	-8.313
Se	7.396	0.309	15.407
r^2	0.0883	3.5286	#N/A
F	0.3872	8.0000	#N/A
SSreg	9.6415	99.6082	#N/A
t	0.8221	-0.7116	

As with single variable regression, the aircraft and dependent variable values are copied from the WUC sheets into the first two columns. However, the independent variable values are copied from the IndepVars sheets into the cells to the right of the vertical double lines. Then the independent variable values, either untransformed or transformed, which will be used in the regression equation are put next to the dependent variable values (just left of the vertical pair of lines). In Figure 7a, the values for independent variable X2 have been copied untransformed and transformed. The equation for two-variable regression analysis is always:

LINEST(B3:B13,C3:D13,TRUE,TRUE) .

Note how the second parameter is specified as a block of cells which contains all of the independent variable values (either untransformed or transformed). For multiple regression the equation never has to be changed. As different independent variable values are copied into columns C and D, the equation will automatically be recalculated and displayed in the calculation section. Also, for all three multiple regression sheets a t statistic is calculated. This is an added calculation. It is not a result of LINEST.

5. Shuttle Scheduled and Unscheduled Reliability and Maintainability Data

Space shuttle maintenance data obtained from the Operations and Support Database and Analysis Study by Lockheed Martin Manned Space Systems has been summarized in two Microsoft™ Excel 5.0 Workbooks. The scheduled maintenance data is in the *SCHEDDATA.XLS* workbook, and the unscheduled data is in the *UNSDDATA.XLS* workbook.

The shuttle maintenance data as received from Lockheed Martin was organized by Space Transportation System (STS) number. The maintenance data for each STS number was presented in individual spreadsheets. Within each spreadsheet the data was organized by shuttle flight system codes. In order to incorporate this data into the Reliability and Maintainability Model (RAM), the data has been reorganized by Work Breakdown Structure (WBS). The data for each WBS is now presented in individual spreadsheets, and within each of these spreadsheets, the data is organized by STS number.

The *SCHEDDATA.XLS* and *UNSDDATA.XLS* workbooks contain many individual spreadsheets. The first sheet in each workbook is the Definitions sheet. It lists the shuttle flight system codes with their definitions in ascending order and the corresponding Work Breakdown Structure (WBS) codes. It also lists the WBS codes with their definitions in ascending order and the corresponding shuttle flight system codes. The Definitions sheets for the *SCHEDDATA.XLS* and *UNSDDATA.XLS* workbooks are different because unscheduled maintenance tasks were recorded for shuttle flight system codes for which scheduled maintenance was not performed. The remaining sheets contain the shuttle maintenance data for each WBS, template sheets which contain the formulas used to calculate summary statistics, and original maintenance data for subsystems which were not incorporated into WBS codes.

5.1 Scheduled Maintenance Data

There is one spreadsheet for each WBS. All the sheets are identical in format. An example sheet is in Figure 8. The columns left of the vertical double lines present the mission information and the maintainance data for the WBS listed in the upper left corner of the sheet. Right of the vertical double lines are the subsystem data, as obtained from Lockheed Martin, which was combined to calculate the maintainance data for the WBS. Data for different subsystems is separated by one vertical line. Below the horizontal double lines are summary statistics of the WBS maintainance data.

Figure 8. Example Worksheet - Shuttle Scheduled Maintenance Data

WBS 10.00 ELECTRICAL									SUBSYS 76 ELECTRICAL POWER DISTRIBUTION				SUBSYST 77 INTERCONNECTING WIRING			
						MEAN	MEAN	MEAN		MEAN	MEAN	MEAN		MEAN	MEAN	MEAN
Mission	OV	Launch Date	EPOT	GPOT	TASKS	Task Time	Manhrs	Crew Size	TASKS	Task Time	Crew Size	Manhrs	TASKS	Task Time	Crew Size	Manhrs
STS-51	OV 103	9/12/93	236.2	1845	27	12.53	24.65	1.97	25	11.96	1.90	23.67	2	19.70	1.57	36.90
STS-52	OV 102	10/22/92	236	1599	12	12.99	18.53	1.43	5	21.44	1.36	28.89	7	6.95	1.38	11.14
STS-53	OV 103	12/2/92	175.3	2371	16	12.15	17.38	1.43	15	11.29	1.58	16.86	1	25.08	1.00	25.08
STS-54	OV 105	1/13/93	143.7	1288	30	10.81	21.43	1.98	29	10.80	1.87	21.79	1	11.03	1.00	11.03
STS-55	OV 102	4/26/93	239.7	2031	18	12.12	15.91	1.31	15	12.77	1.32	17.21	3	8.83	1.15	9.43
STS-56	OV 103	4/8/93	222.1	1260	34	10.62	19.85	1.87	33	10.58	1.97	20.05	1	12.00	1.10	13.22
STS-57	OV 105	6/21/93	239.8	1328	34	11.87	20.65	1.74	32	10.98	1.67	19.02	2	26.19	1.47	46.67
STS-58	OV 102	10/18/93	335.2	1574	28	13.30	22.94	1.73	26	13.24	1.74	23.43	2	14.01	1.10	16.50
STS-59	OV 105	4/9/94	269.8	1154	6	8.81	23.55	2.67	5	9.24	1.82	26.94	1	6.63	1.00	6.63
STS-60	OV 103	2/3/94	199.2	1338	27	7.72	17.58	2.28	26	7.93	1.89	18.17	1	2.35	1.00	2.35
STS-61	OV 105	12/2/93	260	1586	27	14.08	33.56	2.38	25	11.07	1.92	23.64	2	51.65	2.08	157.52
STS-62	OV 102	3/4/94	335.3	1130	32	9.39	18.49	1.97	28	8.34	1.74	16.15	4	16.71	1.59	34.87
STS-63	OV 103	2/3/95	198.5	1262	7	20.14	42.57	2.11	5	6.81	1.16	8.45	2	53.46	2.21	127.88
STS-64	OV 103	9/9/94	262.9	1591	13	15.48	23.99	1.55	11	7.67	1.23	10.50	2	58.45	1.65	98.19
STS-65	OV 102	7/8/94	353.9	1023	11	18.47	35.25	1.91	8	12.44	1.78	23.41	3	34.54	1.98	66.83
STS-66	OV 104	11/3/94	262.5	1434	18	20.27	36.68	1.81	17	20.31	1.51	37.69	1	19.50	1.00	19.50
STS-67	OV 105	3/2/95	399.2	1273	15	13.62	19.25	1.41	14	13.71	1.27	19.75	1	12.30	1.00	12.30
STS-68	OV 105	9/30/94	269.8	1631	8	12.30	18.68	1.52	7	13.15	1.49	20.45	1	6.33	1.00	6.33
STS-69	OV 105	9/7/95	260.5	1657	13	17.31	54.68	3.16	11	11.88	2.49	34.55	2	47.20	2.36	165.36
STS-70	OV 103	7/13/95	214.3	1447	13	12.55	26.40	2.10	11	8.45	1.47	14.04	2	35.12	2.54	94.34
STS-71	OV 104	6/27/95	235.4	1706	14	15.95	29.07	1.82	13	15.49	1.51	29.62	1	21.93	1.00	21.93
STS-72	OV 105	1/11/96	214	1104	11	15.01	26.64	1.77	11	15.01	1.50	26.64				
STS-73	OV 102	10/20/95	380.9	1770	25	17.54	29.14	1.66	23	17.66	1.42	29.78	2	13.93	1.30	21.86
STS-74	OV 104	11/12/95	196.5	1210	10	15.44	35.47	2.30	9	14.45	2.29	36.70	1	24.38	1.00	24.38
STS-75	OV 102	2/22/96	377.7	1250	2	2.27	2.28	1.00	2	2.27	1.00	2.28				
STS-76	OV 104	3/22/96	221.3	968	4	8.39	12.76	1.52	3	5.29	1.42	7.93	1	17.68	1.54	27.25
TOTALS:			6740	37830	455											
SIMPLE AVERAGE(PER MISSION):			259.2	1455	17.50											
WEIGHTED AVERAGE (PER TASK):						13.03	24.65	1.89								
AVG SCHED MANHRS PER MISSION:							431.45									

The first column lists the STS number. The next four columns list summary information about the individual missions: OV (orbiter vehicle number), launch date, FPOT (flight power-on time), and GPOT (ground power-on time). The data in these five columns is the same for each sheet in the workbook.

The next three columns list the maintainance data for the WBS as calculated from the corresponding subsystem data: TASKS (number of tasks performed), MEAN Task Time, and MEAN Manhrs (manhours). The TASKS values are calculated by summing the subsystem TASKS values for each STS. The MEAN Task Time values are a weighted average of the subsystem MEAN Task Times for each STS:

$$tasktime_{WBS} = \frac{\sum_{AllSubsys} TASKS * MEANtasktime}{\sum_{AllSubsys} TASKS}$$

Similarly, the MEAN Manhrs values are a weighted average of the subsystem MEAN Manhrs for each STS:

$$manhrs_{WBS} = \frac{\sum_{AllSubsys} TASKS * MEANmanhrs}{\sum_{AllSubsys} TASKS}$$

The last column of WBS data is MEAN Crew Size. These data values are calculated by dividing MEAN Manhrs by MEAN Task Time. The MEAN Crew Size values listed for the individual subsystems are the original values obtained from Lockheed Martin; they are not calculated as has been done for the WBS values.

Summary statistics of the maintainance data include: total, simple average, weighted average, and average scheduled manhours per mission. Totals for FPOT, GPOT, and TASKS are calculated by simply summing all the values within a column. A simple average is also calculated for FPOT, GPOT, and TASKS. The simple average is calculated by dividing the total value by the number of missions (26). An exception is the average number of tasks for WBS 3.10. In this case, the total is divided by 8 since there are data for only eight missions. Weighted averages are calculated for Task Time, Manhrs, and Crew Size:

$$AVEtasktime = \frac{\sum_{AllMissions} TASKS * MEANtasktime}{\sum_{AllMissions} TASKS}$$

$$AVEmanhrs = \frac{\sum_{AllMissions} TASKS * MEANmanhrs}{\sum_{AllMissions} TASKS}$$

$$AVEcrew = \frac{\sum_{AllMissions} TASKS * MEANcrew}{\sum_{AllMissions} TASKS}$$

Lastly, the average scheduled manhours per mission is calculated:

$$AVEmanhrs / mission = \frac{\sum_{AllMissions} TASKS * MEANmanhrs}{26}$$

The values in the WBS spreadsheets are numbers. There are no formulas to ensure that no errors occur as data is imported and exported to other applications. The TEMPLATE sheet after all of the WBS sheets contains example data and formulas used. Highlighting a cell causes the formula to be displayed at the top of the sheet. The formulas in the template sheet match those in this discussion. Note that there is a scratch space area with intermediate calculations below the summary statistics.

The seven sheets after the TEMPLATE sheet contain the original Lockheed Martin data for subsystems that were not incorporated into the WBS codes.

5.2 Unscheduled Maintenance Data

There is one spreadsheet for each WBS. The sheets are identical in format except for one cell (to be discussed later). An example sheet is in Figure 9. The columns left of the first pair of vertical lines present the overall mission information and maintainance data for the WBS listed in the upper left corner of the sheet. Right of the first pair of vertical lines are the subsystem data, as obtained from Lockheed Martin, which was combined to calculate the maintainance data for the WBS. Data for different subsystems is separated by two vertical lines. Below the horizontal double lines are summary statistics of the WBS maintainance data.

The first five columns list summary information about the individual missions: STS number, OV (orbiter vehicle number), launch date, FPOT (flight power-on time), and GPOT (ground power-on time). The data in these five columns is the same for each sheet in the workbook, and is the same as in the scheduled maintenance data sheets.

Figure 9. Example Worksheet - Shuttle Unscheduled Maintenance Data

WBS 10.00 ELECTRICAL						SHOP FLOOR				PRACA			SUBSYSTEM 76 ELECTRICAL POWER DISTRIBUTION AND CONTROL				
					MAIN	MTTR	MAIN	CREW	MAIN	REMOVAL	SCRAP	MAX	MAIN	MTTR	MAIN	CREW	MAIN
Mission	OV	Launch	FPOT	GPOT	ACTIVITIES	HOURS	MANHRS	SIZE	ACTIVITIES	RATE	RATE	ACTIVITIES	ACTIVITIES	HOURS	MANHRS	SIZE	ACTIVITIES
STS-51	OV 103	9/13/97	236 2	1845	7	8 66	9 75	1 13	46	0 39	0 00	46	2	4 23	5 02	1 13	4
STS-53	OV 103	12/2/96	175 3	2371	18	28 05	32 50	1 16	205	0 22	0 04	205	7	34 86	37 63	1 07	21
STS-54	OV 105	1/14/97	143 7	1288	11	14 23	15 49	1 09	34	0 21	0 00	34	4	11 66	15 12	1 14	6
STS-55	OV 102	4/27/97	239 7	2031	36	17 29	19 43	1 12	108	0 23	0 00	108	11	13 38	16 77	1 27	13
STS-56	OV 103	4/9/97	222 1	1260	8	6 56	6 56	1 00	42	0 12	0 00	42	1	1 08	1 08	1 00	5
STS-57	OV 105	6/22/97	239 8	1328	16	9 72	10 96	1 13	32	0 19	0 00	32	7	15 45	16 01	1 02	1
STS-58	OV 102	10/19/97	335 2	1574	39	13 38	15 16	1 13	111	0 22	0 04	111	11	22 09	24 59	1 16	15
STS-59	OV 105	4/10/98	269 8	1154	10	6 62	7 13	1 08	29	0 21	0 00	29					5
STS-60	OV 103	2/4/94	199 2	1338	2	13 94	16 47	1 18	29	0 34	0 00	29	1	22 82	22 82	1 00	3
STS-61	OV 105	12/3/97	260	1586	17	19 26	28 19	1 46	71	0 23	0 06	71	3	30 62	51 62	1 41	5
STS-62	OV 102	3/5/98	335 3	1130	17	13 49	16 25	1 20	89	0 30	0 04	89	9	17 15	20 25	1 11	13
STS-63	OV 103	2/4/99	198 5	1262	13	11 55	15 28	1 32	55	0 24	0 23	55					4
STS-64	OV 103	9/10/98	262 9	1591	6	12 70	15 71	1 24	58	0 36	0 00	58					4
STS-65	OV 102	7/9/98	353 9	1023	19	23 85	24 24	1 02	40	0 18	0 00	40	7	29 73	29 73	1 00	1
STS-66	OV 104	11/4/98	262 5	1434	43	28 11	34 86	1 24	302	0 20	0 03	302	6	48 86	61 63	1 23	19
STS-67	OV 105	3/3/99	399 2	1273	3	43 31	53 41	1 23	50	0 26	0 00	50					9
STS-68	OV 105	10/1/98	269 8	1631	6	5 18	5 18	1 00	28	0 36	0 10	28	1	1 00	1 00	1 00	10
STS-69	OV 105	9/8/99	260 5	1657	2	18 99	18 99	1 00	32	0 25	0 13	32	2	18 99	18 99	1 00	6
STS-70	OV 103	7/14/99	214 3	1447	3	11 84	16 63	1 40	46	0 39	0 00	46	2	6 58	10 08	1 51	1
STS-71	OV 104	6/28/99	235 4	1706	3	19 82	22 70	1 15	174	0 19	0 06	174	1	1 12	1 12	1 00	13
STS-72	OV 105	1/12/00	214	1104	1	3 50	3 50	1 00	68	0 19	0 31	68	1	3 50	3 50	1 00	4
STS-73	OV 102	10/21/99	380 9	1770	1	28 10	28 50	1 01	437	0 11	0 04	437	1	28 10	28 50	1 01	17
STS-74	OV 104	11/13/99	196 5	1210					49	0 29	0 00	49					7
STS-75	OV 102	2/23/00	377 7	1250	1	4 12	4 12	1 00	75	0 12	0 00	75					3
STS-76	OV 104	3/23/00	221 3	968					70	0 13	0 00	70					3
TOTALS			6503 7	36231	284							2280					
SIMPLE AVE (PER MISSION)			260 148	1449 24						0 24	0 04	91 20					
WEIGHTED AVE (PER TASK)						17 53	20 69	1 17									
MTBF (GPOT+FPOT)		18 74															
MTMF (OP HRS/FAIL)		18 744															
TOTALS			5685	30656	222							1336					
SIMPLE AVE (PER MISSION)			258 41	1393 45						0 24	0 04	60 73					
WEIGHTED AVE (PER TASK)						14 58	16 96	1 16									
MTBF (GPOT+FPOT)		27 20															
MTMF (OP HRS/FAIL)		27 202															

Figure 9. Example Worksheet - Shuttle Unscheduled Maintenance Data (continued)

			SUBSYSTEM 77							
			INTERCONNECTING WIRING							
OPER	REMOVAL	SCRAP	MAIN.	MTTR	MAIN.	CREW	MAIN.	OPER	REMOVAL	SCRAP
HOURS	RATE	RATE	ACTIVITIES	HOURS	MANHRS	SIZE	ACTIVITIES	HOURS	RATE	RATE
2081.00	75.00%	0.00%	5	10.43	11.65	1.04	42	2081	35.71%	0.00%
2546.00	52.38%	18.18%	11	23.71	29.23	1.16	184	2546	19.02%	0.00%
1432.00	66.67%	0.00%	7	15.70	15.70	1.00	28	1432	10.71%	0.00%
2271.00	61.54%	0.00%	27	18.88	20.52	1.12	95	2271	17.89%	0.00%
436.20	40.00%	0.00%	7	7.35	7.35	1.00	37	1482	8.11%	0.00%
1568.00	100.00%	0.00%	9	5.26	7.04	1.33	31	1568	16.13%	0.00%
1909.00	53.33%	12.50%	28	9.96	11.45	1.08	96	1909	16.67%	0.00%
1424.00	60.00%	0.00%	10	6.62	7.13	1.08	24	1424	12.50%	0.00%
1537.00	100.00%	0.00%	1	5.07	10.13	2.00	26	1537	26.92%	0.00%
1846.00	80.00%	25.00%	14	16.83	23.17	1.18	66	1846	18.18%	0.00%
1465.00	69.23%	0.00%	8	9.38	11.75	1.25	76	1465	23.68%	5.56%
1461.00	75.00%	100.00%	13	11.55	15.28	1.21	51	1461	19.61%	0.00%
1854.00	100.00%	0.00%	6	12.70	15.71	1.16	54	1854	31.48%	0.00%
1377.00	0.00%	0.00%	12	20.42	21.04	1.01	39	1377	17.95%	0.00%
1697.00	78.95%	0.00%	37	24.74	30.52	1.19	283	1697	16.25%	4.35%
1672.00	66.67%	0.00%	3	43.31	53.41	1.32	41	1672	17.07%	0.00%
1901.00	80.00%	12.50%	5	6.01	6.01	1.00	18	1901	11.11%	0.00%
1918.00	83.33%	20.00%					26	1918	11.54%	0.00%
1661.00	66.67%	0.00%	1	22.37	29.75	1.33	34	1661	29.41%	0.00%
1941.00	46.15%	0.00%	2	29.17	33.49	1.08	161	1941	16.77%	7.41%
1318.00	75.00%	33.33%					64	1318	15.63%	30.00%
2151.00	47.06%	12.50%					420	2151	9.76%	2.44%
1407.00	71.43%	0.00%					42	1407	21.43%	0.00%
1628.00	33.33%	0.00%	1	4.12	4.12	1.00	72	1628	11.11%	0.00%
1189.00	33.33%	0.00%					67	1189	11.94%	0.00%
41690.2								42736		
35296.2								36342.0		

The remaining columns before the first pair of vertical lines contain the maintenance data for the WBS. The WBS maintenance data is separated from the mission information and is also divided into to sections by single vertical lines. The SHOP FLOOR data corresponds to the top section of data in the original Lockheed Martin spreadsheets. The PRACA data corresponds to the bottom section of data in the original Lockheed Martin spreadsheets. The subsystem data is also divided into SHOP FLOOR and PRACA sections by a vertical line.

The WBS SHOP FLOOR data is summarized in four columns: MAIN. ACTIVITIES (number of shop floor maintenance activities), MTTR HOURS (mean time to repair in hours), MAIN. MANHRS (maintenance manhours), and CREW SIZE. The column of MAIN. ACTIVITIES values are calculated by summing the subsystem shop floor MAIN. ACTIVITIES values for each STS. The MTTR HOURS and MAIN. MANHRS values are weighted averages of the subsystem MTTR HOURS and MAIN. MANHRS for each STS:

$$MTTR_{WBS} = \frac{\sum_{AllSubsys(SHOP)} ACTIVITIES * MTTR}{\sum_{AllSubsys(SHOP)} ACTIVITIES}$$

$$MANHRS_{WBS} = \frac{\sum_{AllSubsys(SHOP)} ACTIVITIES * MANHRS}{\sum_{AllSubsys(SHOP)} ACTIVITIES}$$

The last column of shop floor data is CREW SIZE. These data values are calculated by dividing MANHRS by MTTR. As with the scheduled maintenance data, the CREW SIZE values listed for the individual subsystems are the original values obtained from Lockheed Martin; they are not calculated as has been done for the WBS values.

The WBS PRACA data is listed in three columns: MAIN. ACTIVITIES, REMOVAL RATE, and SCRAP RATE. The column of MAIN. ACTIVITIES values are calculated by summing the subsystem PRACA MAIN. ACTIVITIES values for each STS. The REMOVAL RATE and SCRAP RATE values are weighted averages of the subsystem REMOVAL RATE and SCRAP RATE values for each STS:

$$REMOVAL_{WBS} = \frac{\sum_{AllSubsys(PRACA)} ACTIVITIES * REMOVAL}{\sum_{AllSubsys(PRACA)} ACTIVITIES}$$

$$SCRAP_{WBS} = \frac{\sum_{AllSubsys(PRACA)} ACTIVITIES * SCRAP}{\sum_{AllSubsys(PRACA)} ACTIVITIES}$$

The final column of WBS maintenance data is MAX. ACTIVITIES. The MAX. ACTIVITIES values are the maximum of the shop floor and PRACA MAIN. ACTIVITIES values. For some missions, more shop floor maintenance activities were recorded than PRACA activities. Selecting the maximum value of the two MAIN. ACTIVITIES ensures that all recorded maintenance activities are included in the summary statistics. If only the PRACA values were used, the total number of maintenance activities would be too low. These values are used to calculate the mean number of missions per maintenance activity as described in the following paragraphs.

There are two sets of summary statistics, separated by a single line, beneath the maintenance data. The two sets calculate the same statistics but use different missions. The top set includes all the missions in the calculations. The bottom set does not include missions STS-53, STS-66, and STS-73.

Summary statistics of the maintainance data include: total, simple average, weighted average, MTBF (mean time (GPOT+FPOT) between failures), and MTMF (mean operating time or missions between failures). Totals for FPOT, GPOT, and shop floor MAIN. ACTIVITIES, and MAX. ACTIVITIES are calculated by simply summing all the values within a column. A simple average is calculated for FPOT, GPOT, REMOVAL RATE, SCRAP RATE, and MAX. ACTIVITIES. The simple average is calculated by dividing the total value by the number of missions which have recorded maintenance activities. Weighted averages are calculated for MTTR, MANHRS, and CREW SIZE:

$$AVEmttr = \frac{\sum_{Missions} ACTIVITIES * MTTR}{\sum_{Missions} ACTIVITIES}$$

$$AVEmanhrs = \frac{\sum_{Missions} ACTIVITIES * MANHRS}{\sum_{Missions} ACTIVITIES}$$

$$AVEcrew = \frac{\sum_{Missions} ACTIVITIES * CREWSIZE}{\sum_{Missions} ACTIVITIES}$$

The mean time between failures is calculated by dividing the sum of GPOT and FPOT by the total MAX. ACTIVITIES.

$$MTBF_{GPOT+FPOT} = \frac{GPOT + FPOT}{Total_{MaxActivities}}$$

The final statistic calculated is MTMF. If at least one subsystem in a WBS does not have recorded operating hours, the mean number of missions between failures is calculated:

$$MTMF_{MISSIONS} = \frac{1}{SimpleAverage_{MaxActivities}}$$

Otherwise, the mean operating time between failures is calculated:

$$MTMF_{OpHrs/Failure} = \frac{OperatingHours}{Total_{MaxActivities}}$$

The value for *OperatingHours* is the largest of all of the subsystem's PRACA data OPER. HOURS within the WBS.

As with the scheduled maintenance data, the values in the WBS spreadsheets are numbers. There are no formulas to ensure that no errors occur as data is imported and exported to other applications. The TEMPLATE(1) and TEMPLATE(2) sheets after all of the WBS sheets have data and formulas. TEMPLATE(1) uses a WBS with no recorded operating hours so the mean number of missions between failures is calculated. TEMPLATE(2) uses a WBS with recorded operating hours so the mean operating hours between failures is calculated. Highlighting a cell causes the formula to be displayed at the top of the sheet. Note that there are two scratch space areas with intermediate calculations below the summary statistics.

The nine sheets after the TEMPLATE sheet contain the original Lockheed Martin data for subsystems that were not incorporated into the WBS codes.

6.0 NASA RELIABILITY AND MAINTAINABILITY DATA BASE SYSTEM

6.1 Overview

The Reliability and Maintainability Database (R&M DB) was developed to provide the Langley Research Center personnel the capability to review and analyze aircraft (vehicle) reliability and performance data utilizing a relational database and graphic user interface (GUI) as an alternative to the Excel spreadsheets presented earlier. The goals of the R&M DB are to:

1. Provide easy access to reliability and maintainability data either by specific vehicle (e.g. F-15C) or by Work Unit Code (WUC). This is accomplished by a GUI that is divided into three categories; Report Operations, Import Data and Data Review, and Regression Analysis.

2. Provide basic statistical analysis of reliability and maintainability data by either vehicle or by WUC. The typical values provided are raw sample size, minimum and maximum data points, averages, and standard deviations. The database also provides a weighted average of reliability and performance factors against either a specific vehicle or a WUC.

3. Provide regression analysis of independent variables (e.g. number of control surfaces) versus a dependent variable (e.g. flying hours between maintenance activities). The regression analysis is allowed against any WUC utilizing any independent/dependent variable combination. The presentation of the regression data is both tabular as well as graphical. The user is provided the ability to select linear, exponential, logarithmic, polynomial, or power regression analysis against the raw data.

4. Provide hard-copy report of performance data either by vehicle or WUC.

This discussion consists of two primary sections; R&M DB Functionality and the database design specifications. The R&M DB Functionality will provide an overview of the major functions and their associated screens within the database. The database design specifications will provide the overall table structure with their fields and the relationships between each of these tables. Several temporary tables that are used for importing the raw R&M data are not depicted since they are only used during the import process.

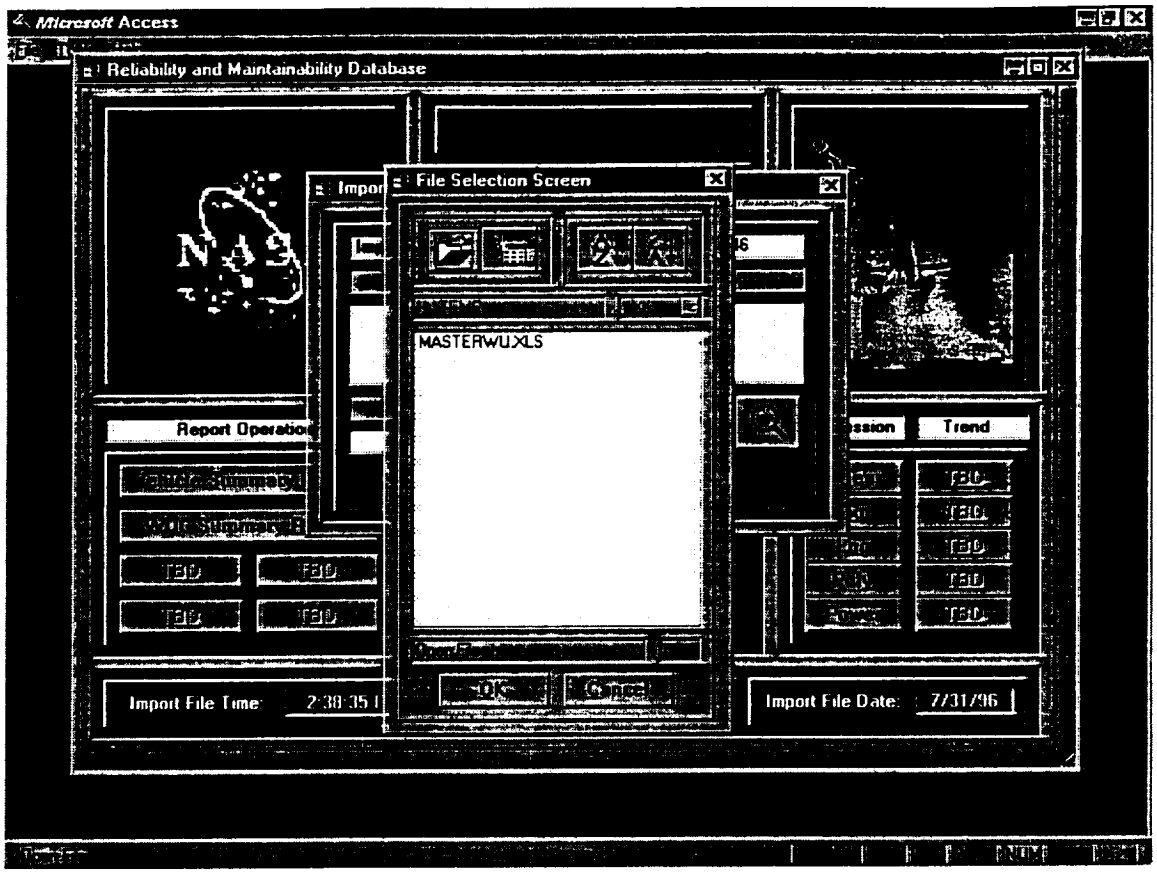
6.2 Functionality

The R&M DB functionality is broken down into five main categories:

Import WUC spreadsheet.
Active file selection.
Data Review.

selection screen. Upon selecting the file to be imported. The path/file name is returned to the Import Control Screen to allow the user to import the selected file into the R&M DB.

Figure 12. File Selection Screen.

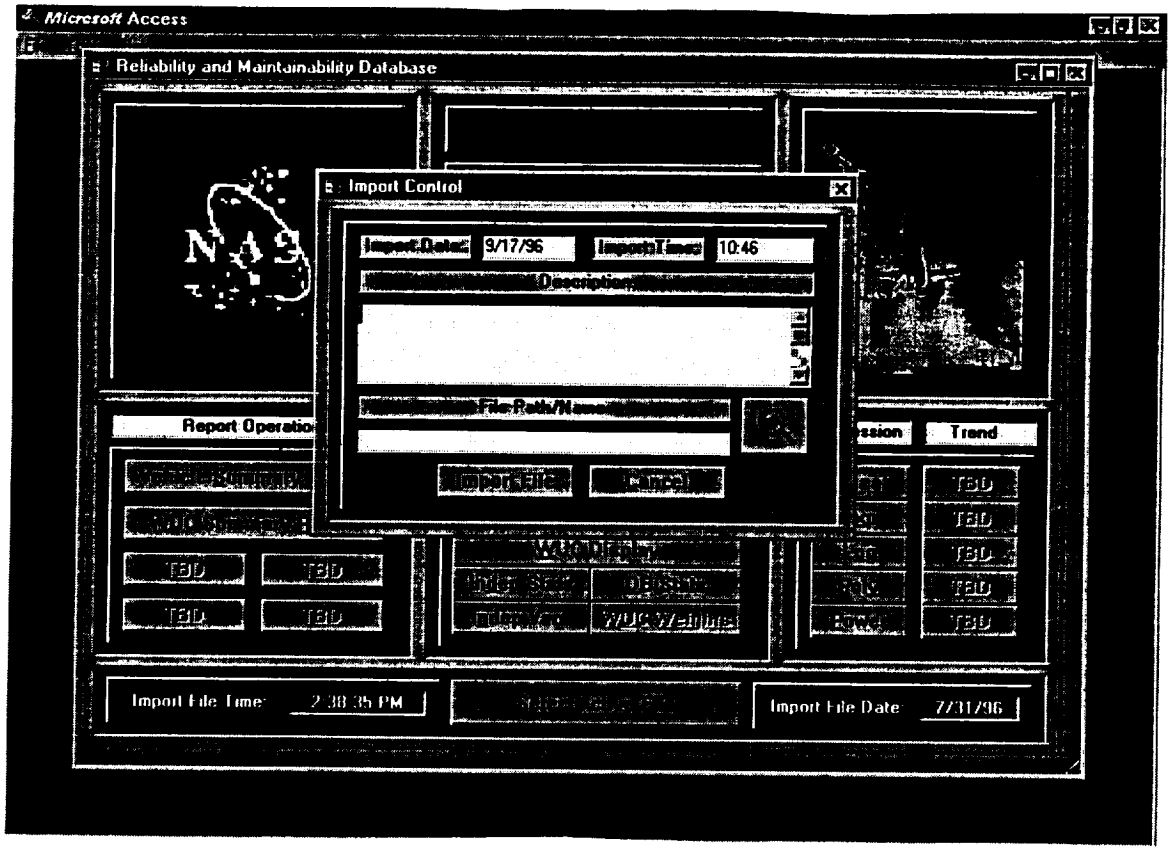


The File Selection Screen contains push buttons for sorting the files in ascending or descending order, changing the current directory, and opening or selecting the file for return to the Import Control Screen.

Table 4. Import Control Field Definitions.

Field Name	Required/ Optional	Field Description	Database Table	Database Field
Import Date	Required	Import Date in combination with the Import Time provide a system generated date/time stamp of when the WUC spreadsheet record set was imported into the R&M DB.	Import Control	Import Date
Import Time	Required	Import Date in combination with the Import Time provide a system generated date/time stamp of when the WUC spreadsheet record set was imported into the R&M DB.	Import Control	Import Time
Description	Optional	Provides user with the ability to add a note or description concerning the import of the WUC spreadsheet.	Import Control	Description
File Path/Name	Required	Provides the location of the file and name of the file to be imported into the R&M DB.	Import Control	Import File Name

Figure 11. Import Control Screen.

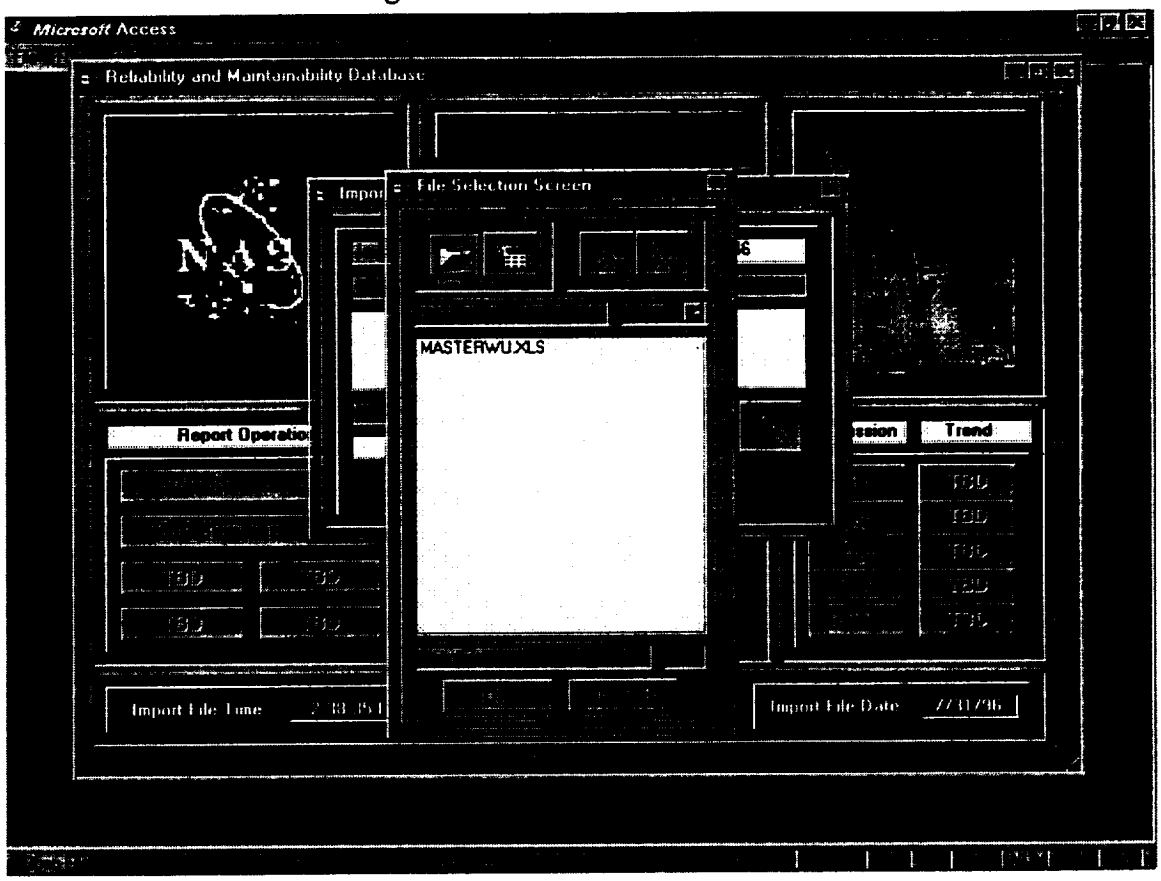


The Import File push-button, locates and imports the file specified in the File Path/Name field into the R&M DB. The import process runs for several seconds, bringing in each individual sheet within the WUC spreadsheet into a temporary database area prior being committed to the permanent working table in the database. The reason for using temporary tables is two fold. First, to allow validation of data on a sheet by sheet basis (i.e. WUC11, WUC12, etc.) This allows validation to occur field by field. In the event of an individual field error, just the individual field will be left empty instead of rejecting all fields within a vehicle record. The second reason, is in case of a major import error when reading each of the WUC sheets. In this case, an error message will occur indicating which sheet had the error. Since a major error will cause the entire sheet to be rejected, the import process stops, and deletes the temporary tables to prevent corruption of the R&M DB. The user will then need to correct the error and re-import the spreadsheet into the database. If their are no errors, the temporary tables are committed or moved to the permanent tables, with the main window being updated with the new date/time stamp indicating that this is now the current record set for review and analysis.

The find file push-button (shapes like a magnifying glass), opens the dialog box presented in Figure 12. This essentially allows the user to locate the WUC file through a

selection screen. Upon selecting the file to be imported. The path/file name is returned to the Import Control Screen to allow the user to import the selected file into the R&M DB.

Figure 12. File Selection Screen.



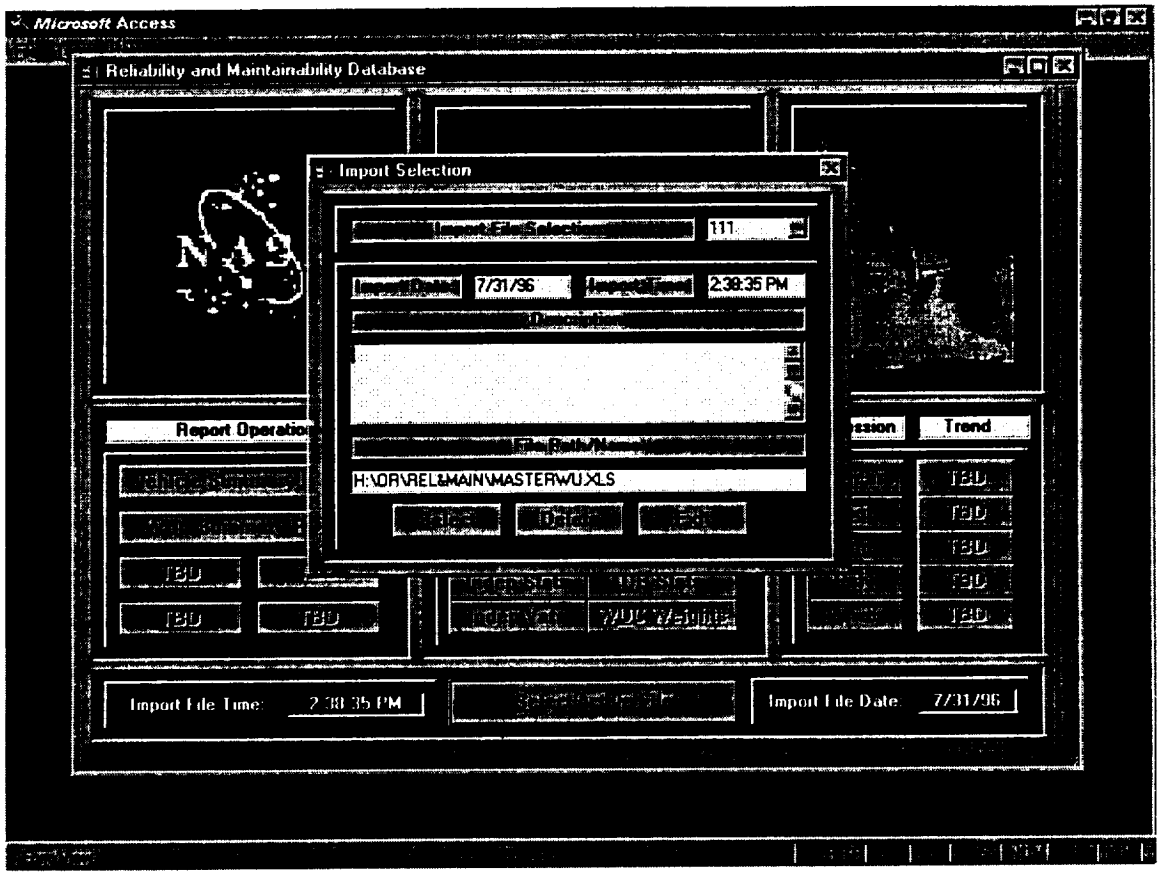
The File Selection Screen contains push buttons for sorting the files in ascending or descending order, changing the current directory, and opening or selecting the file for return to the Import Control Screen.

6.2.2 Active file selection.

The Active File Selection screen performs two primary functions; selecting an import record set for conducting analysis and review against, and deleting record sets that are no longer required for analysis and review.

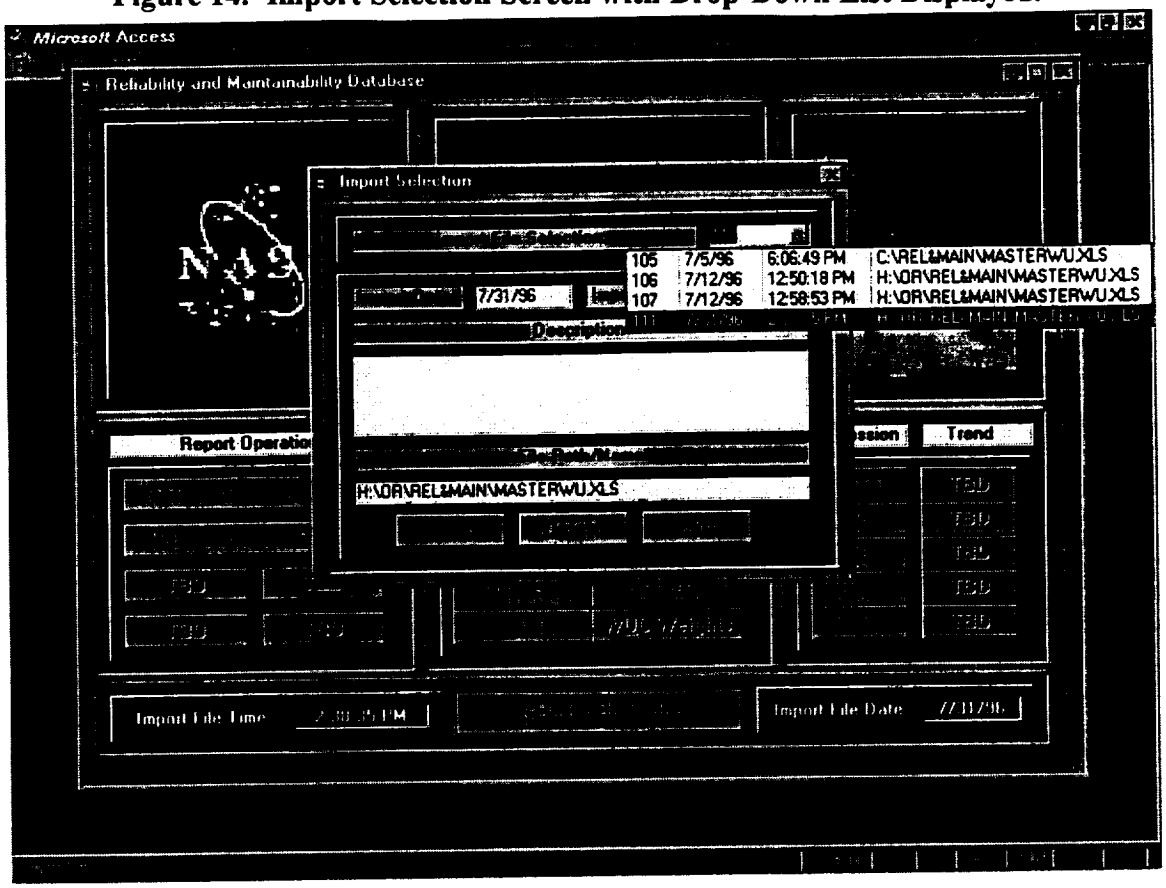
The screen defaults to showing the current record set that is active (see Figure 13). This is the same record set whose date/time stamp is displayed on the main window.

Figure 13. Import Selection Screen.



In order to change the record set, use the mouse to select the drop-down list located in the upper right corner of the Import Selection Screen. A list of the imported record sets will be displayed for selection (see Figure 14). Select the desired record set. The record sets Import Date, Time, Description, and File Path/Name will appear. To select the file as the active file, either enter Alt + S, or press the Select push-button. This record will now be active record set for analysis and review.

Figure 14. Import Selection Screen with Drop-Down List Displayed.



In order to delete the record set, follow the same procedures for selecting the record from the drop-down list. After the record set's data has appear, either enter Alt + D; or press the Delete push-button to delete the record set. If the record-set chosen for deletion is the current, active record set, an error message indicating that the active record set cannot be delete. Just select a new record set to be active using the above procedures, and then use the drop-down list to bring the old record set's data back for deletion as outlined above. This prevents deletion of all record sets from the database.

6.2.3 Data Review.

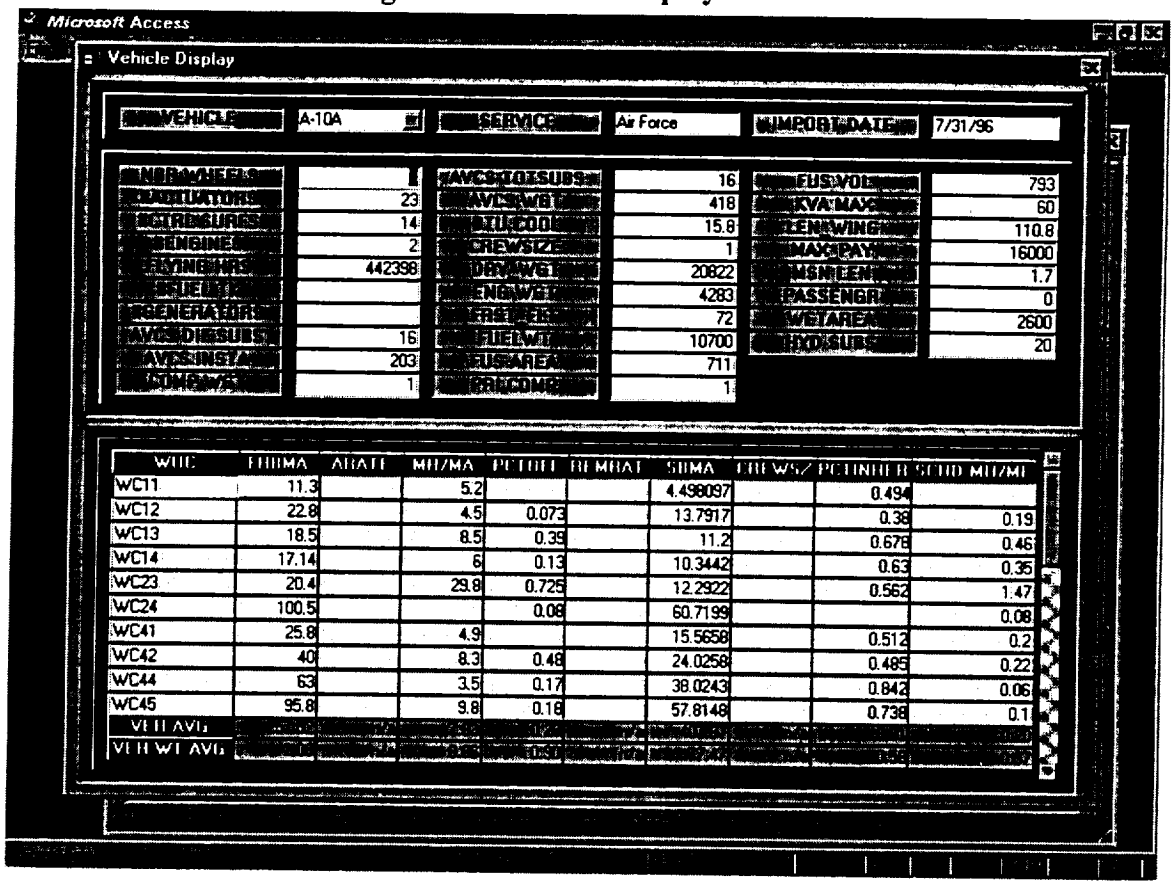
The Data Review section is divided into five areas; Vehicle Display, WUC Display, Independent Variable Statistics, Database Statistics, and Independent Variable Review. Each screen is described in detail below.

6.2.3.1 Vehicle Display.

The Vehicle Display (See Figure 15) provides R&M performance data by individual vehicle. The screen contains independent data by select vehicle with associated WUC data. The independent vehicle in the upper section of the screen is file maintainable,

however the WUC data is not. The R&M performance data by WUC has an average and weight average calculated for each dependent R&M variable.

Figure 15. Vehicle Display Screen.



The average is just a simple average across all non-zero/blank R&M dependent variables. The Weighted Average is calculated as show below for FHBMA followed by the remaining R&M performance variables:

$$\text{WT FHBMA} = \frac{1}{\sum \frac{1}{\text{FHBMA}}}$$

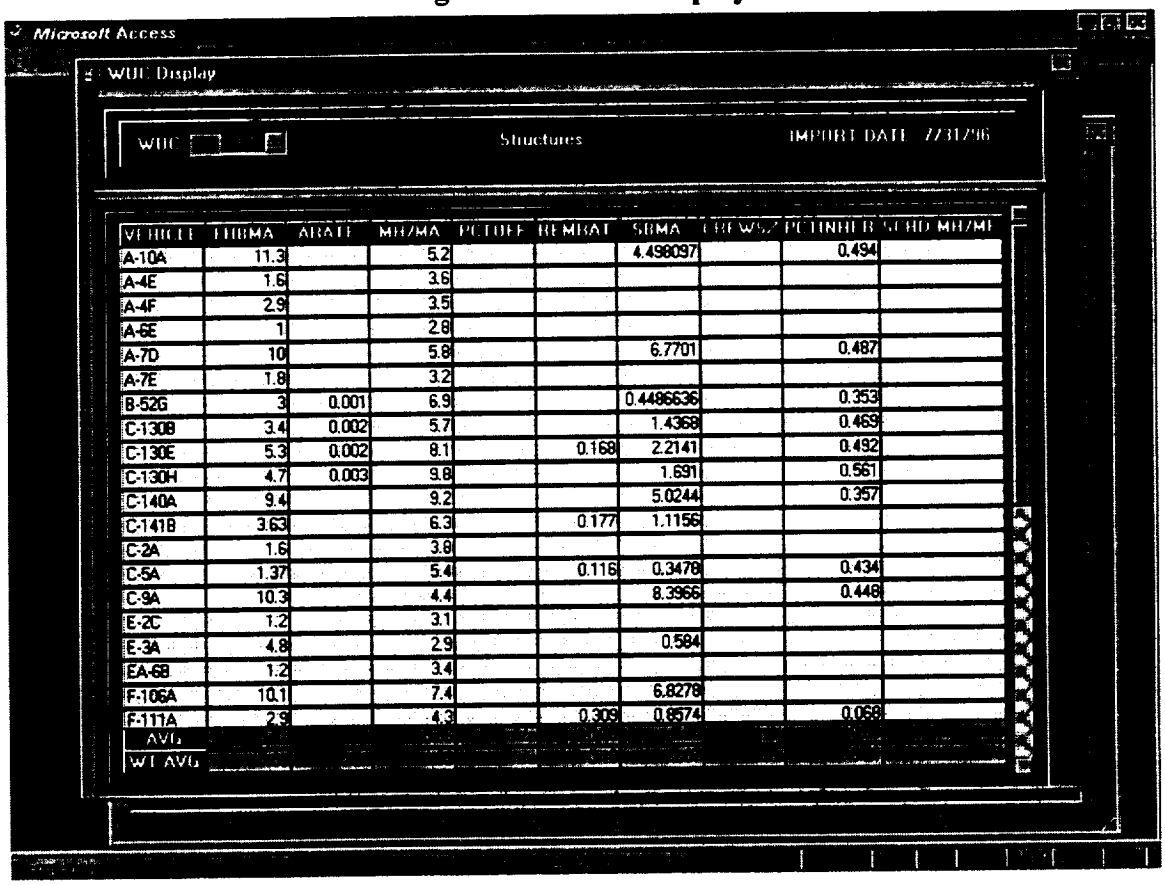
$$\text{WT R\& M Variable} = \frac{\sum \text{R\& M Variable} * \frac{1}{\text{FHBMA}}}{\sum \frac{1}{\text{FHBMA}}}$$

The Vehicle Display Screen contains a drop-down list in the upper corner that allows selection of any vehicle for review/file maintenance of independent variables and review of associated WUC data. By selecting the vehicle of interest, the screen is automatically updated with the corresponding data.

6.2.3.2 WUC Display.

The WUC Display (Figure 16) is very similar to the vehicle display, except the focus is now based upon an individual WUC, such as structures (WUC11), and the R&M Performance data across all associated vehicles.

Figure 16. WUC Display.



VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	PCTINHER	SCHD MH/MF
A-10A	11.3		5.2			4.498097	0.494	
A-4E	1.6		3.6					
A-4F	2.9		3.5					
A-6E	1		2.8					
A-7D	10		5.8			6.7701	0.487	
A-7E	1.8		3.2					
B-52G	3	0.001	6.9			0.4486636	0.353	
C-130B	3.4	0.002	5.7			1.4368	0.469	
C-130E	5.3	0.002	8.1		0.168	2.2141	0.492	
C-130H	4.7	0.003	9.8			1.691	0.561	
C-140A	9.4		9.2			5.0244	0.357	
C-141B	3.63		6.3		0.177	1.1156		
C-2A	1.6		3.8					
C-5A	1.37		5.4		0.116	0.3478	0.434	
C-9A	10.3		4.4			8.3966	0.448	
E-2C	1.2		3.1					
E-3A	4.8		2.9			0.584		
EA-6B	1.2		3.4					
F-106A	10.1		7.4			6.8279		
F-111A	2.9		4.3		0.309	0.8574	0.068	
AVG								
WT AVG								

The average is just a simple average across all non-zero/blank R&M dependent variables. The Weighted Average is calculated as show below for FHBMA followed by the remaining R&M performance variables:

$$\text{WT FHBMA} = \frac{1}{\sum \frac{1}{\text{FHBMA}}}$$

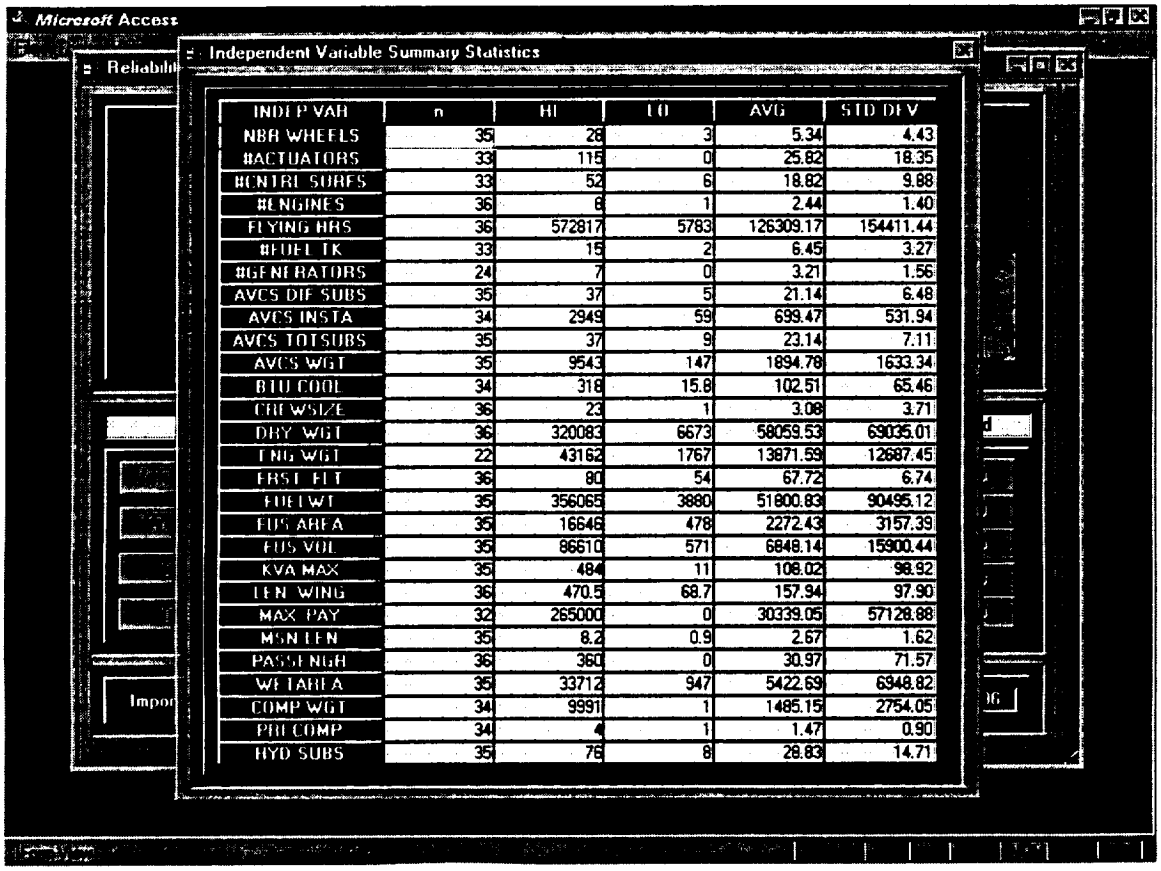
$$\text{WT R\& M Variable} = \frac{\sum \text{R\& M Variable} * \frac{1}{\text{FHBMA}}}{\sum \frac{1}{\text{FHBMA}}}$$

The WUC Display Screen contains a drop-down list in the upper corner that allows selection of any WUC for review of a WUC and its associated Vehicle data. By selecting the WUC of interest, the screen is automatically updated with the corresponding data.

6.2.3.3 Independent Vehicle Summary Statistics Display.

The Independent Vehicle Summary Statistics Display provides an analysis of the independent vehicle data across all vehicles in the record set. The sample size, maximum and minimum points, averages, and standard deviation are calculated and displayed (see Figure 17). This screen provides a good statistical summary of independent vehicle data. The average represent what a typical vehicle's independent data would look like.

Figure 17. Independent Vehicle Summary Statistics Screen.

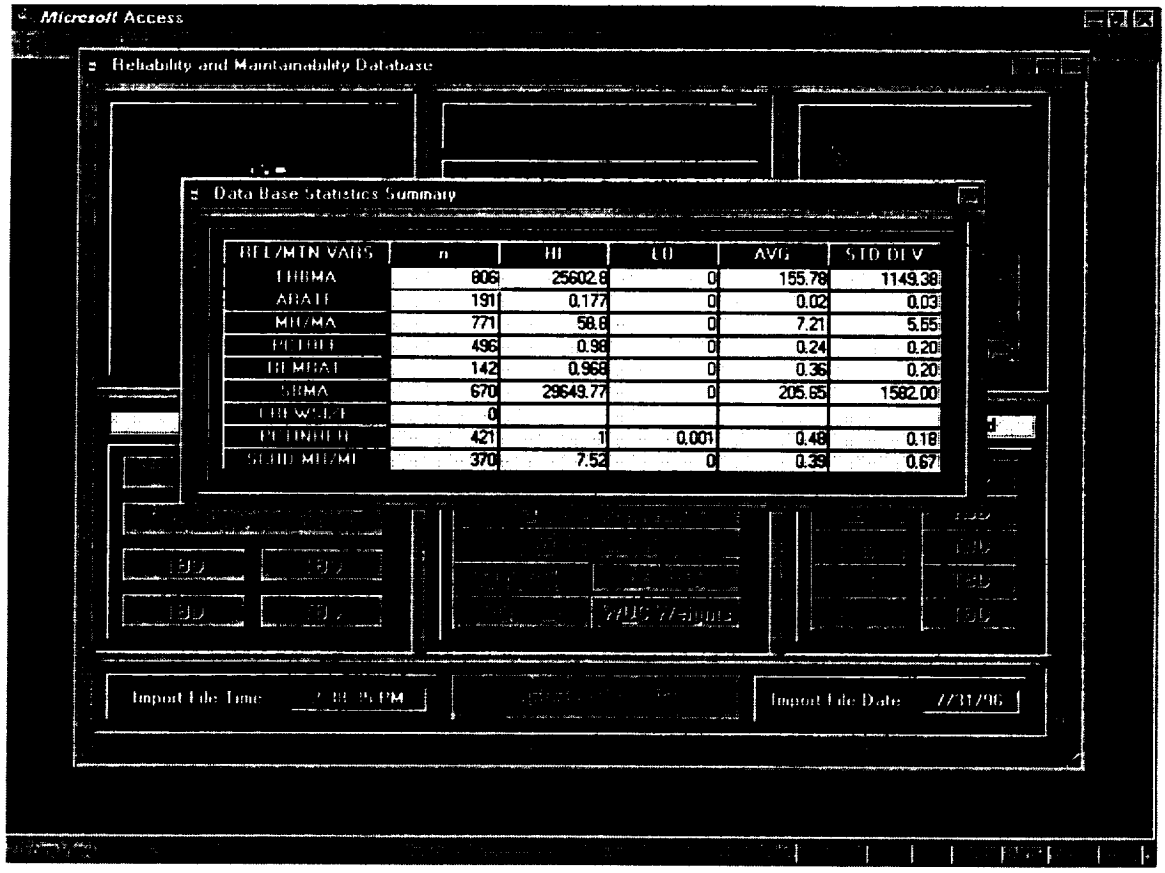


INDEP VAR	n	HI	LO	AVG	STD DEV
NBR WHEELS	35	28	3	5.34	4.43
#ACTUATORS	33	115	0	25.82	18.35
#CNTRL SURFS	33	52	6	18.82	9.88
#ENGINES	36	8	1	2.44	1.40
FLYING HRS	36	572817	5783	126309.17	154411.44
#FUEL TK	33	15	2	6.45	3.27
#GENERATORS	24	7	0	3.21	1.56
AVCS DIF SUBS	35	37	5	21.14	6.48
AVCS INSTA	34	2949	59	699.47	531.94
AVCS TOTSUBS	35	37	9	23.14	7.11
AVCS WGT	35	9543	147	1894.78	1633.34
BTU COOL	34	318	15.8	102.51	65.46
CREWSIZE	36	23	1	3.08	3.71
DRY WGT	36	320083	6673	58059.53	69035.01
ENG WGT	22	43162	1767	13871.59	12687.45
FRST FLT	36	80	54	67.72	6.74
FUELWT	35	356065	3880	51800.83	90495.12
FUS AREA	35	16646	478	2272.43	3157.39
FUS VOL	35	86610	571	6848.14	15900.44
KVA MAX	35	484	11	108.02	98.92
LEN WING	36	470.5	68.7	157.94	97.90
MAX PAY	32	265000	0	30339.05	57128.88
MSN LEN	35	8.2	0.9	2.67	1.62
PASSENGR	36	360	0	30.97	71.57
WETAREA	35	33712	947	5422.69	6948.82
COMP WGT	34	9991	1	1485.15	2754.05
PRI COMP	34	4	1	1.47	0.90
HYD SUBS	35	76	8	28.83	14.71

6.2.3.4 Data Base Statistics Summary.

The Data Base Summary Statistics Display provides an analysis of the dependent R&M performance data across all vehicles and WUCs in the record set. The sample size, maximum and minimum points, averages, and standard deviation are calculated and displayed (see Figure 18). This screen provides a good statistical summary of what a typical or average vehicle's dependent R&M performance data would look like.

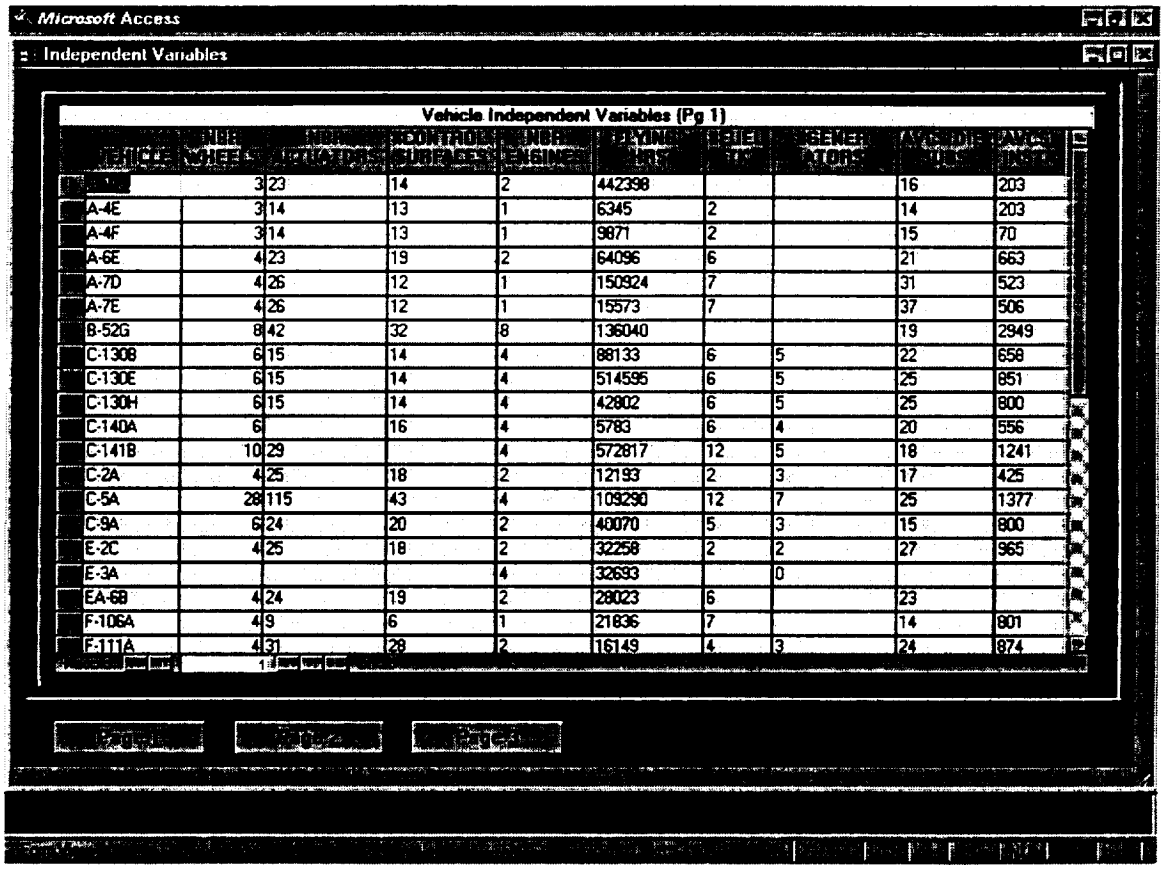
Figure 18. Data Base Statistics Summary Screen.



6.2.3.5. Independent Variable Display.

The Independent Variable Screen provides a detailed listing of all Independent Vehicle data that was imported from the Excel spreadsheet. The report is broken into three pages that list all independent variables by vehicle. Figure 19 shows a sample of page 1. To see page 2 or 3, select the Page 2 or Page 3 push-button located in the lower left corner of the screen. To view the remaining vehicle's independent data, scroll down using the scroll bar located along the right edge of the screen. Vehicles are listed in alphabetical order.

Figure 19. Independent Variable Vehicle Display – Page 1.

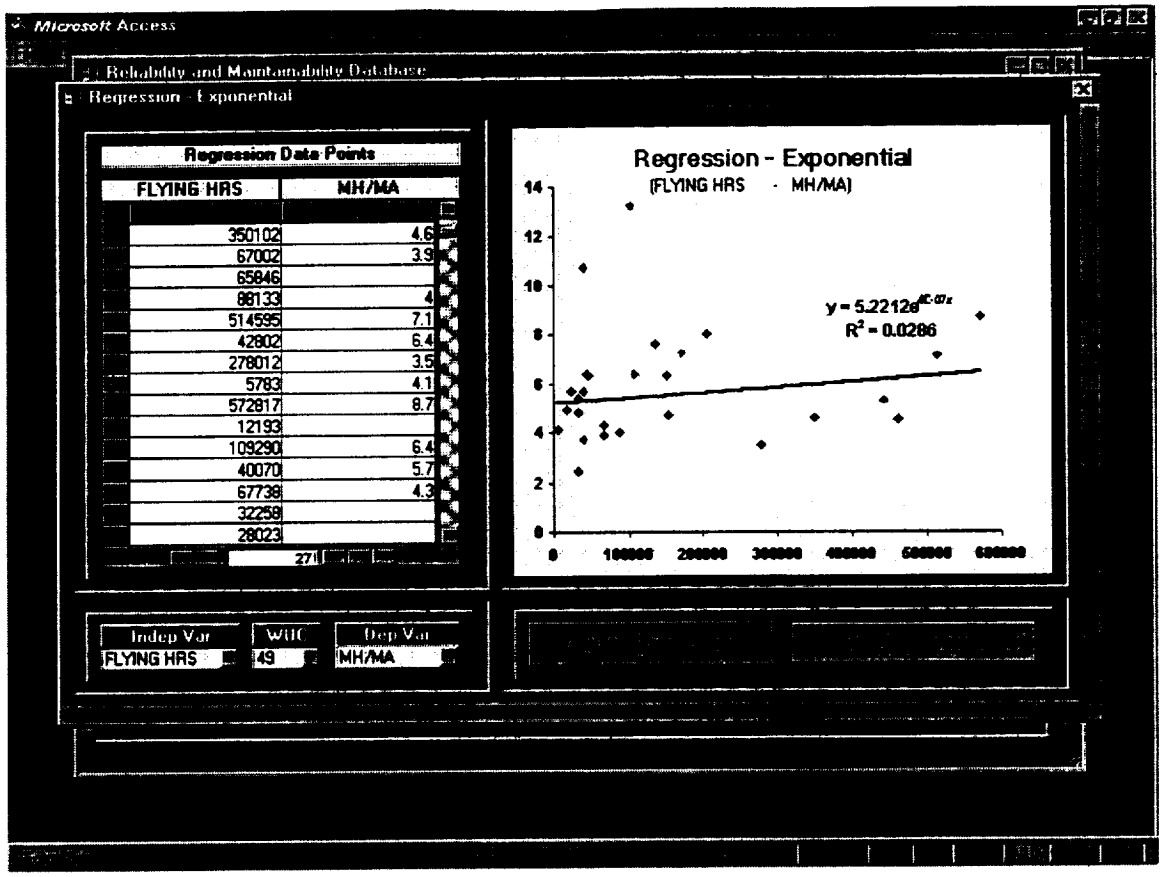


VEHICLE	WHEEL	AXLE	CONTROL SURFACE	ENGINE	PAYLOAD	FUEL	GEAR	CYCLE	RANGE
	3	23	14	2	442398			16	203
A-4E	3	14	13	1	6345	2		14	203
A-4F	3	14	13	1	9871	2		15	70
A-6E	4	23	19	2	64096	6		21	663
A-7D	4	26	12	1	150924	7		31	523
A-7E	4	26	12	1	15573	7		37	506
B-52G	8	42	32	8	136040			19	2949
C-130B	6	15	14	4	88133	6	5	22	658
C-130E	6	15	14	4	514595	6	5	25	851
C-130H	6	15	14	4	42802	6	5	25	800
C-140A	6		16	4	5783	6	4	20	556
C-141B	10	29		4	572817	12	5	18	1241
C-2A	4	25	18	2	12193	2	3	17	425
C-5A	28	115	43	4	109290	12	7	25	1377
C-9A	6	24	20	2	40070	5	3	15	800
E-2C	4	25	18	2	32258	2	2	27	965
E-3A				4	32693		0		
EA-6B	4	24	19	2	28023	6		23	
F-106A	4	9	6	1	21836	7		14	801
F-111A	4	31	28	2	16149	4	3	24	874

6.2.4 Data Regression Analysis.

The R&M DB provides five models, linear, exponential, lognormal, polynomial, or power to perform regression analysis by using the "least squares" method to fit a line or curve through a set of observations. You can use this tool to analyze how a single dependent variable is affected by the values of an independent variable (see Figure 20).

Figure 20. Regression – Exponential.



The regression analysis screens allow for any combination of Independent Variable to WUC to Dependent Variable. After the appropriate variables have been selected, enter the Update Data Point push-button to have the R&M DB to update the Regression Data Points table. The column headers for x and y will match the values selected. At this point the values can be modified, added, or deleted in order to provide a "what-if" analysis capability. Once the values in the Regression Data Point table are entered, select the Update Regression Plot push-button to update the graph and calculate the R-square value. The graph will display the corresponding x and y values in the Regression Data Points Table indicating the values have been updated.

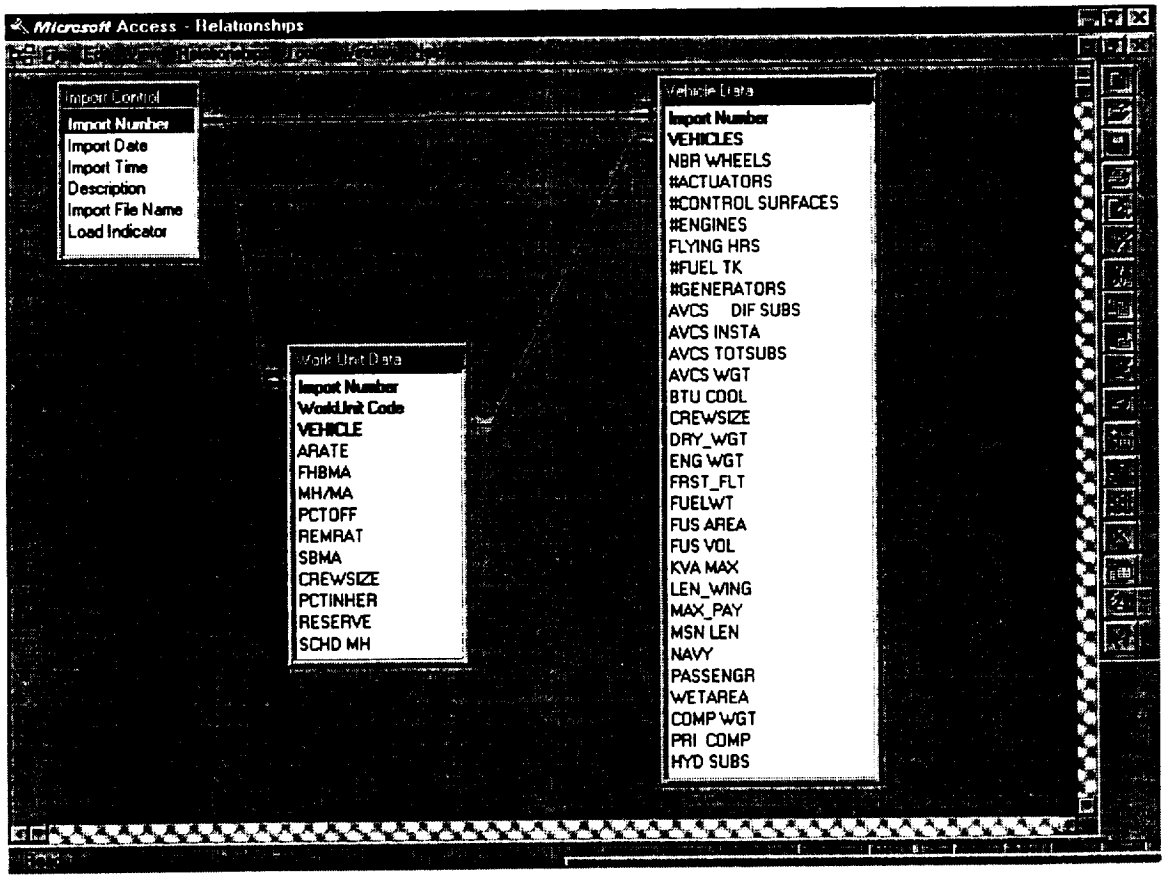
6.2.5 Report operations

The R&M DB allows for two reports to generated. The first is the Vehicle Summary Report which is similar to the Vehicle Display Screen. The report displays each vehicle's independent data followed by the WUC R&M performance data. The report is generated across all vehicles. The second report is the WUC Summary Report. This report displays each WUC with its associated R&M performance data for each vehicle. Both reports go directly to the printer when their push-button is entered.

6.3 Database Design Specifications.

Figure 21 displays the primary tables, attributes and relationships used within the R&M DB.

Figure 21. Table Relationship Diagram.



6.4 Recommended Improvements.

6.4.1 Trend Analysis. Add capability to provide trend analysis of R&M performance factors across user specified time-frames. Data would be displayed in tabular and graphical format similar to regression data.

6.4.2 Multi-variant Regression Analysis. Expand regression capability to perform multi-variant regression analysis. Variables would be specified by the user and displayed in tabular and graphical format similar to the single variable regression data in current model.

6.4.3 Import File Validation and Error Checking. Add capability to validate individual work unit codes and associated fields. Generate report to identify individual field corrections by worksheet/attribute/cell. This would assist in identifying corrections required to excel spreadsheet used for input.

6.4.4 Improve Graphical User Interface (GUI). Utilize standard Windows GUI dialog boxes for file selection. Add menu picks to quickly navigate to screens/reports. Add search capabilities to locate data of interest. Allow user to create dynamic SQL queries to generate customized data selection reports. Add additional user-defined reports on statistical analysis, as well as, ability to print screens directly.

6.4.5 Space Shuttle Specific R&M Data. Add specialized screens and reports associated with shuttle specific data.

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----------Multiple Regression----------

Date/Time 12-07-1996 09:44:42
Data Base Name C:\NASA\DATA\WUC11R
Description Merge of WUC11 and REG96 created 12-01-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	3.545243	0.0000	.5244955	6.76	0.0011		
WETAREA	-.149E-03	-2.0882	.1364E-03	-1.10	0.3234	0.5276	0.5276
FUS AREA	.1060E-02	7.0077	.6006E-03	1.76	0.1380	0.5753	0.5724
FUS VOL	-.113E-03	-4.0468	.6927E-04	-1.64	0.1630	0.7552	0.5120
NCONTSUR	-.144E-01	-0.2712	.2202E-01	-0.65	0.5433	0.7744	0.1791

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	189.138	189.138		
Model	4	4.118433	1.029608	4.29	0.071
Error	5	1.199857	.2399714		
Total	9	5.31829	.5909212		

Root Mean Square Error	.4898688
Mean of Dependent Variable	4.349
Coefficient of Variation	.1126394
R Squared	0.7744
Adjusted R Squared	0.5939

----------Multiple Regression----------

Date/Time 12-07-1996 09:36:38
Data Base Name C:\NASA\DATA\WUC11R
Description Merge of WUC11 and REG96 created 12-01-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	89.90472	0.0000	23.76155	3.78	0.0128		
LDRYWGT	-13.55416	-5.8727	3.968573	-3.42	0.0189	0.1750	0.1750
SRWETARA	.1166015	2.4021	.4732E-01	2.46	0.0569	0.5237	0.0695
SRNCNSUR	2.082743	1.1889	1.049067	1.99	0.1039	0.6348	0.0943
LLENWING	8.126679	2.0766	5.165152	1.57	0.1764	0.7558	0.1147

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	97.71876	97.71876		
Model	4	40.9585	10.23963	3.87	0.085
Error	5	13.23734	2.647467		
Total	9	54.19584	6.02176		

Root Mean Square Error	1.627104
Mean of Dependent Variable	3.126
Coefficient of Variation	.5205067
R Squared	0.7558
Adjusted R Squared	0.5604

----------Multiple Regression----------

Date/Time 12-07-1996 09:56:43
Data Base Name C:\NASA\DATA\WUC11R
Description Merge of WUC11 and REG96 created 12-01-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.4183259	0.0000	.8855E-01	4.72	0.0032		
FUS AREA	-.857E-04	-4.9121	.6555E-04	-1.31	0.2388	0.0423	0.0423
FUS VOL	.6445E-05	2.0011	.5966E-05	1.08	0.3216	0.0713	0.0526
SRFUSVOL	.4404E-02	4.3775	.2561E-02	1.72	0.1363	0.0869	0.0310
SRNCNSUR	-.969E-01	-1.5700	.2732E-01	-3.55	0.0121	0.7050	0.0958

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.1859	.1859		
Model	4	5.019785E-02	1.254946E-02	3.59	0.080
Error	6	2.100215E-02	3.500358E-03		
Total	10	.0712	.00712		

Root Mean Square Error	5.916382E-02
Mean of Dependent Variable	.13
Coefficient of Variation	.4551064
R Squared	0.7050
Adjusted R Squared	0.5084

----------Multiple Regression----------

Date/Time 12-07-1996 09:49:29
Data Base Name C:\NASA\DATA\WUC11R
Description Merge of WUC11 and REG96 created 12-01-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.2201702	0.0000	.1322475	1.66	0.1568		
LEN+WING	.1429E-02	2.8725	.1904E-02	0.75	0.4867	0.0265	0.0265
WETAREA	-.939E-05	-1.5219	.1423E-04	-0.66	0.5385	0.0274	0.0229
SRWETARA	-.414E-02	-3.1361	.6061E-02	-0.68	0.5248	0.0791	0.0311
SRFUSVOL	.1811E-02	2.3966	.1150E-02	1.57	0.1762	0.2818	0.0033
SRNCNSUR	-.392E-01	-0.8457	.0262509	-1.49	0.1956	0.5033	0.1482

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	4.203636E-02	4.203636E-02		
Model	5	2.021457E-02	4.042913E-03	1.01	0.494
Error	5	1.994907E-02	3.989814E-03		
Total	10	4.016364E-02	4.016364E-03		

Root Mean Square Error	6.316498E-02
Mean of Dependent Variable	6.181818E-02
Coefficient of Variation	1.021786
R Squared	0.5033
Adjusted R Squared	0.0066

----------Multiple Regression----------

Date/Time 12-28-1996 12:22:54
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC11 created 12-28-1996

Multiple Regression Report

Dependent Variable: SCHMH/FH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-6.683599	0.0000	1.736758	-3.85	0.0063		
WETAREA	.2420E-03	6.1078	.4591E-04	5.27	0.0012	0.2261	0.2261
LDRYWGT	.9358249	2.7611	.2160691	4.33	0.0034	0.2466	0.2374
SRWETARA	-.493E-01	-6.0410	.1153E-01	-4.27	0.0037	0.4519	0.1965
MAX KVA	-.636E-02	-2.2671	.1432E-02	-4.44	0.0030	0.8566	0.0996

Analysis of Variance Report

Dependent Variable: SCHMH/FH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	4.800675	4.800675		
Model	4	1.491902	.3729756	10.45	0.004
Error	7	.2497226	3.567465E-02		
Total	11	1.741625	.1583295		

Root Mean Square Error	.1888773
Mean of Dependent Variable	.6325
Coefficient of Variation	.2986203
R Squared	0.8566
Adjusted R Squared	0.7747

----------Multiple Regression----------

Date/Time 12-28-1996 12:19:07
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC11 created 12-28-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.039182	0.0000	.1836513	5.66	0.0008		
LDRYWGT	.2729856	4.0101	.4342E-01	6.29	0.0004	0.0016	0.0016
LLENWING	-.5456474	-4.3174	.7881E-01	-6.92	0.0002	0.8542	0.0264
SRFUSVOL	.2691E-03	0.2794	.2660E-03	1.01	0.3449	0.8728	0.0016

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	15.84	15.84		
Model	3	5.498613E-02	1.832871E-02	16.01	0.002
Error	7	8.013866E-03	1.144838E-03		
Total	10	.063	.0063		

Root Mean Square Error	3.383546E-02
Mean of Dependent Variable	1.2
Coefficient of Variation	2.819621E-02
R Squared	0.8728
Adjusted R Squared	0.8183

----------Multiple Regression----------

Date/Time 12-07-1996 10:04:58
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC12 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-25.26913	0.0000	15.0343	-1.68	0.1271		
FUS VOL	.1790E-03	2.0493	.5065E-04	3.53	0.0064	0.4082	0.4082
LLENWING	7.918097	2.3607	3.885911	2.04	0.0720	0.4496	0.1024
SRWETARA	-.1615698	-3.6447	.6842E-01	-2.36	0.0425	0.6602	0.1485

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	261.6325	261.6325		
Model	3	35.7494	11.91647	5.83	0.017
Error	9	18.4035	2.044834		
Total	12	54.15291	4.512743		

Root Mean Square Error	1.429977
Mean of Dependent Variable	4.486154
Coefficient of Variation	.3187534
R Squared	0.6602
Adjusted R Squared	0.5469

----------Multiple Regression----------

Date/Time 12-07-1996 10:03:54
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC12 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-45.08255	0.0000	82.06814	-0.55	0.5999		
LDRYWGT	-24.58048	-2.6606	11.43416	-2.15	0.0686	0.0055	0.0055
SRDRYWGT	.2089885	2.9178	.1210302	1.73	0.1279	0.1359	0.0006
FUS VOL	.1406E-02	3.2341	.5467E-03	2.57	0.0369	0.2492	0.0732
SRFUSVOL	-.9519057	-7.2082	.2710233	-3.51	0.0098	0.3433	0.0339
LLENWING	65.75401	3.9393	18.17455	3.62	0.0085	0.7712	0.0222

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	3066.471	3066.471		
Model	5	1034.25	206.8499	4.72	0.033
Error	7	306.8921	43.84172		
Total	12	1341.142	111.7618		

Root Mean Square Error	6.621308
Mean of Dependent Variable	15.35846
Coefficient of Variation	.431118
R Squared	0.7712
Adjusted R Squared	0.6077

----------Multiple Regression----------

Date/Time 12-07-1996 10:07:18
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC12 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.8868796	0.0000	.1870586	4.74	0.0015		
FUS VOL	.5062E-05	0.7294	.2302E-05	2.20	0.0591	0.0075	0.0075
SRNCNSUR	-.1485516	-1.1171	.0441182	-3.37	0.0098	0.5894	0.3414

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.7857818	.7857818		
Model	2	.1948706	.0974353	5.74	0.028
Error	8	.1357476	1.696845E-02		
Total	10	.3306182	3.306182E-02		

Root Mean Square Error	.130263
Mean of Dependent Variable	.2672727
Coefficient of Variation	.4873785
R Squared	0.5894
Adjusted R Squared	0.4868

----------Multiple Regression----------

Date/Time 12-07-1996 10:05:58
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC12 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.4654971	0.0000	.9618E-01	4.84	0.0013		
FUS VOL	.5874E-05	1.2640	.1184E-05	4.96	0.0011	0.2564	0.2564
SRNCNSUR	-.0923572	-1.0372	.2268E-01	-4.07	0.0036	0.7579	0.0129

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.1681454	.1681454		
Model	2	.1123672	.0561836	12.52	0.003
Error	8	3.588735E-02	4.485919E-03		
Total	10	.1482545	1.482545E-02		

Root Mean Square Error	.066977
Mean of Dependent Variable	.1236364
Coefficient of Variation	.5417258
R Squared	0.7579
Adjusted R Squared	0.6974

----------Multiple Regression----------

Date/Time 12-28-1996 12:38:09
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC12 created 12-28-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.2684834	0.0000	.6175E-01	4.35	0.0025		
WETAREA	.3954E-04	3.6555	.7010E-05	5.64	0.0005	0.5097	0.5097
SRWETARA	-.672E-02	-3.0016	.1450E-02	-4.63	0.0017	0.8669	0.3372

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	6.568182E-02	6.568182E-02		
Model	2	.1125335	5.626674E-02	26.04	0.000
Error	8	.0172847	2.160587E-03		
Total	10	.1298182	1.298182E-02		

Root Mean Square Error	4.648212E-02
Mean of Dependent Variable	7.727273E-02
Coefficient of Variation	.6015333
R Squared	0.8669
Adjusted R Squared	0.8336

----------Multiple Regression----------

Date/Time 12-28-1996 12:34:20
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC12 created 12-28-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	2.668165	0.0000	.3579073	7.45	0.0000		
LEN+WING	.1972E-01	6.7781	.6592E-02	2.99	0.0152	0.0247	0.0247
WETAREA	.1298E-03	3.4406	.3623E-04	3.58	0.0059	0.1259	0.0056
SRWETARA	-.800E-01	-10.3118	.2072E-01	-3.86	0.0039	0.6707	0.0374

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	19.08173	19.08173		
Model	3	1.111254	.3704181	6.11	0.015
Error	9	.5455149	6.061276E-02		
Total	12	1.656769	.1380641		

Root Mean Square Error	.2461966
Mean of Dependent Variable	1.211538
Coefficient of Variation	.2032099
R Squared	0.6707
Adjusted R Squared	0.5610

----------Multiple Regression----------

Date/Time 12-28-1996 12:42:37
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC13 created 12-28-1996

Multiple Regression Report

Dependent Variable: SBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	16.25317	0.0000	3.869469	4.20	0.0040		
LDRYWGT	-2.738585	-2.1796	.6400656	-4.28	0.0037	0.1027	0.1027
NWHEELS	-.9006954	-4.5543	.3258669	-2.76	0.0279	0.3275	0.0095
SRNWHEEL	8.702813	6.3266	2.696546	3.23	0.0145	0.7297	0.0056

Analysis of Variance Report

Dependent Variable: SBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	40.01458	40.01458		
Model	3	14.28604	4.762013	6.30	0.021
Error	7	5.29178	.7559686		
Total	10	19.57782	1.957782		

Root Mean Square Error	.8694645
Mean of Dependent Variable	1.907273
Coefficient of Variation	.455868
R Squared	0.7297
Adjusted R Squared	0.6139

----------Multiple Regression----------

Date/Time 12-07-1996 10:21:33
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC13 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-11.23893	0.0000	7.623129	-1.47	0.2004		
DRYWGT	-.536E-03	-13.9714	.8164E-04	-6.56	0.0012	0.1318	0.1318
WETAREA	.3849E-02	10.3141	.6129E-03	6.28	0.0015	0.3685	0.0821
FUS AREA	-.234E-02	-2.8608	.5904E-03	-3.97	0.0106	0.3699	0.0798
FUS VOL	.1500E-02	10.0257	.2722E-03	5.51	0.0027	0.5303	0.0577
NWHEELS	-5.774456	-10.6633	1.275405	-4.53	0.0062	0.6836	0.0342
SRNWHEEL	24.84601	6.7039	6.618232	3.75	0.0132	0.9171	0.0550

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	781.8217	781.8217		
Model	6	141.7149	23.61915	9.22	0.014
Error	5	12.80387	2.560774		
Total	11	154.5188	14.04716		

Root Mean Square Error	1.600242
Mean of Dependent Variable	8.071667
Coefficient of Variation	.1982542
R Squared	0.9171
Adjusted R Squared	0.8177

----------Multiple Regression----------

Date/Time 12-07-1996 10:26:41
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC13 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	6.563067	0.0000	1.745618	3.76	0.0132		
LDRYWGT	-.854121	-6.3358	.2338453	-3.65	0.0147	0.0008	0.0008
SRWETARA	.1511E-01	5.2989	.4887E-02	3.09	0.0271	0.3007	0.0248
NWHEELS	-.1537245	-7.9343	.5031E-01	-3.06	0.0282	0.4099	0.0112
SRNWHEEL	1.233723	9.3228	.4409672	2.80	0.0381	0.7186	0.0174
SRMAXPAY	-.779E-03	-0.8508	.6509E-03	-1.20	0.2848	0.7813	0.0939

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.191309	1.191309		
Model	5	.1533676	3.067351E-02	3.57	0.094
Error	5	4.292335E-02	8.58467E-03		
Total	10	.1962909	1.962909E-02		

Root Mean Square Error	.0926535
Mean of Dependent Variable	.3290909
Coefficient of Variation	.2815438
R Squared	0.7813
Adjusted R Squared	0.5627

----------Multiple Regression----------

Date/Time 12-07-1996 10:22:46
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC13 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	16.99261	0.0000	6.749201	2.52	0.0359		
DRYWGT	.7131E-04	3.6474	.3132E-04	2.28	0.0523	0.0020	0.0020
FUS VOL	-.438E-03	-5.6851	.1589E-03	-2.75	0.0249	0.1094	0.0047
NWHEELS	2.074667	7.4981	.9220908	2.25	0.0546	0.2924	0.0019
SRNWHEEL	-10.03341	-5.3630	5.440146	-1.84	0.1024	0.5035	0.0050

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	636.86	636.86		
Model	4	21.17106	5.292765	2.03	0.183
Error	8	20.87703	2.609629		
Total	12	42.04809	3.504008		

Root Mean Square Error	1.615435
Mean of Dependent Variable	6.999231
Coefficient of Variation	.2308017
R Squared	0.5035
Adjusted R Squared	0.2552

----------Multiple Regression----------

Date/Time 12-28-1996 12:45:01
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC13 created 12-28-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	5.383699	0.0000	1.164201	4.62	0.0024		
LDRYWGT	-.8677102	-2.6946	.224843	-3.86	0.0062	0.0158	0.0158
NWHEELS	-.3496082	-6.5103	.1147466	-3.05	0.0187	0.1858	0.0352
SRNWHEEL	3.085464	8.3952	.924998	3.34	0.0125	0.4639	0.0305
NHYDRLIC	.1245E-01	0.7120	.5443E-02	2.29	0.0560	0.6933	0.0243

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	31.13741	31.13741		
Model	4	1.053404	.263351	3.96	0.055
Error	7	.4660878	6.658398E-02		
Total	11	1.519492	.1381356		

Root Mean Square Error	.2580387
Mean of Dependent Variable	1.610833
Coefficient of Variation	.1601896
R Squared	0.6933
Adjusted R Squared	0.5180

----------Multiple Regression----------

Date/Time 12-07-1996 10:29:06
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC13 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	2.842724	0.0000	1.114053	2.55	0.0512		
LDRYWGT	-.2560811	-2.9678	.1492401	-1.72	0.1468	0.0614	0.0614
SRWETARA	.5365E-02	2.9390	.3119E-02	1.72	0.1461	0.6809	0.0030
NWHEELS	.4423E-02	0.3567	.3211E-01	0.14	0.8958	0.7256	0.0018
SRNWHEEL	-.0994446	-1.1740	.2814253	-0.35	0.7382	0.7340	0.0008
SRMAXPAY	.4394E-03	0.7495	.4154E-03	1.06	0.3386	0.7826	0.0452

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.447282	1.447282		
Model	5	6.293553E-02	1.258711E-02	3.60	0.093
Error	5	1.748265E-02	3.496531E-03		
Total	10	8.041818E-02	8.041819E-03		

Root Mean Square Error	5.913147E-02
Mean of Dependent Variable	.3627273
Coefficient of Variation	.1630191
R Squared	0.7826
Adjusted R Squared	0.5652

----------Multiple Regression----------

Date/Time 12-07-1996 10:41:03
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC14 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-42.35764	0.0000	15.19649	-2.79	0.0686		
DRYWGT	-.339E-03	-10.4412	.1070E-03	-3.17	0.0504	0.0795	0.0795
LEN+WING	-.2282923	-8.9457	.1140957	-2.00	0.1392	0.1441	0.0346
FUS VOL	.6514E-03	5.3425	.2513E-03	2.59	0.0809	0.1730	0.0658
SRWETARA	.9730861	14.2661	.4139138	2.35	0.1002	0.2297	0.0419
NACTUATR	-.8431572	-7.4235	.3068087	-2.75	0.0709	0.2432	0.0343
SRNACTUA	11.6534	7.0288	3.857561	3.02	0.0567	0.8128	0.0157

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	433.4906	433.4906		
Model	6	78.90524	13.15087	2.17	0.280
Error	3	18.17681	6.058935		
Total	9	97.08204	10.78689		

Root Mean Square Error	2.46149
Mean of Dependent Variable	6.584
Coefficient of Variation	.3738594
R Squared	0.8128
Adjusted R Squared	0.4383

----------Multiple Regression----------

Date/Time 12-28-1996 12:47:48
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC13 created 12-28-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.6320707	0.0000	.2131241	-2.97	0.0313		
LEN+WING	-.181E-02	-3.1057	.4887E-03	-3.71	0.0138	0.0545	0.0545
NWHEELS	-.548E-01	-5.4335	.1793E-01	-3.06	0.0282	0.0945	0.0918
SRNWHEEL	.5651085	7.9979	.1648905	3.43	0.0187	0.5667	0.1230
NCONTSUR	.4461E-02	0.8023	.1900E-02	2.35	0.0657	0.7940	0.2010

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.169	.169		
Model	4	4.017484E-02	1.004371E-02	4.82	0.058
Error	5	1.042516E-02	2.085032E-03		
Total	9	.0506	5.622222E-03		

Root Mean Square Error	4.566215E-02
Mean of Dependent Variable	.13
Coefficient of Variation	.3512473
R Squared	0.7940
Adjusted R Squared	0.6291

----------Multiple Regression----------

Date/Time 12-07-1996 10:48:41
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC14 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.2170921	0.0000	.4706933	-0.46	0.6640		
LDRYWGT	.6668E-01	0.9178	.5026E-01	1.33	0.2420	0.0101	0.0101
NACTUATR	-.272E-01	-10.7160	.1064E-01	-2.56	0.0506	0.0684	0.0093
NCONTSUR	.4792E-01	9.0338	.2285E-01	2.10	0.0901	0.1031	0.0231
SRNACTUA	.469414	13.0645	.1759847	2.67	0.0445	0.2301	0.0112
SRNCNSUR	-.684233	-12.7469	.292764	-2.34	0.0666	0.6321	0.0188

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	8.032727E-02	8.032727E-02		
Model	5	3.405058E-02	6.810116E-03	1.72	0.284
Error	5	1.982215E-02	3.96443E-03		
Total	10	5.387273E-02	5.387273E-03		

Root Mean Square Error	6.296372E-02
Mean of Dependent Variable	8.545455E-02
Coefficient of Variation	.7368094
R Squared	0.6321
Adjusted R Squared	0.2641

----------Multiple Regression----------

Date/Time 12-07-1996 10:42:10
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC14 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	15.77621	0.0000	3.359412	4.70	0.0033		
DRYWGT	.1106E-03	5.9174	.2229E-04	4.96	0.0025	0.0613	0.0613
LEN+WING	-.169E-01	-1.1816	.8056E-02	-2.10	0.0806	0.0818	0.0788
FUS VOL	-.471E-03	-6.5557	.8386E-04	-5.61	0.0014	0.3782	0.0029
NACTUATR	.4463678	6.8494	.1060499	4.21	0.0056	0.5449	0.0200
SRNACTUA	-4.470394	-4.8481	1.226993	-3.64	0.0108	0.8583	0.0339

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	432.3601	432.3601		
Model	5	30.45584	6.091168	7.27	0.016
Error	6	5.026984	.8378307		
Total	11	35.48283	3.225712		

Root Mean Square Error	.915311
Mean of Dependent Variable	6.0025
Coefficient of Variation	.1524916
R Squared	0.8583
Adjusted R Squared	0.7403

----------Multiple Regression----------

Date/Time 12-28-1996 12:55:42
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC14 created 12-28-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	4.183498	0.0000	.826622	5.06	0.0039		
NACTUATR	-.712E-01	-13.4141	.1601E-01	-4.45	0.0067	0.0050	0.0050
NCONTSUR	.2652975	17.7542	.6173E-01	4.30	0.0077	0.0418	0.0232
SRNACTUA	1.015753	13.4567	.2427596	4.18	0.0086	0.0795	0.0139
SRNCNSUR	-2.597548	-18.4793	.5908247	-4.40	0.0070	0.8108	0.0187

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	16.84804	16.84804		
Model	4	.1895401	4.738503E-02	5.36	0.047
Error	5	4.421986E-02	8.843972E-03		
Total	9	.23376	2.597333E-02		

Root Mean Square Error	.0940424
Mean of Dependent Variable	1.298
Coefficient of Variation	7.245177E-02
R Squared	0.8108
Adjusted R Squared	0.6595

----------Multiple Regression----------

Date/Time 12-07-1996 10:49:34
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC14 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.7487321	0.0000	.4722433	1.59	0.1737		
SRFUSVOL	.1126E-02	0.9177	.1283E-02	0.88	0.4204	0.0043	0.0043
NACTUATR	-.314E-01	-8.8011	.1798E-01	-1.74	0.1416	0.0656	0.0047
NCONTSUR	.5635E-01	7.5794	.3197E-01	1.76	0.1383	0.1811	0.0644
SRNACTUA	.5296267	10.5156	.2805524	1.89	0.1177	0.1891	0.0005
SRNCNSUR	-.8052139	-10.7015	.401325	-2.01	0.1011	0.5508	0.0740

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.6676455	.6676455		
Model	5	.0583014	1.166028E-02	1.23	0.414
Error	5	4.755314E-02	9.510629E-03		
Total	10	.1058545	1.058546E-02		

Root Mean Square Error	9.752245E-02
Mean of Dependent Variable	.2463636
Coefficient of Variation	.3958476
R Squared	0.5508
Adjusted R Squared	0.1015

----------Multiple Regression----------

Date/Time 12-07-1996 10:58:25
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC23 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-90.0554	0.0000	83.85666	-1.07	0.3081		
LDRYWGT	47.54783	3.4267	11.2904	4.21	0.0018	0.0419	0.0419
SRDRYWGT	-.1448107	-1.3594	.7070E-01	-2.05	0.0677	0.1584	0.0789
NENGINES	1.755774	0.1881	2.156714	0.81	0.4345	0.1975	0.0823
LOGENGWT	-41.16485	-2.5665	8.894321	-4.63	0.0009	0.7446	0.1898

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	3451.327	3451.327		
Model	4	2656.311	664.0778	7.29	0.005
Error	10	911.141	91.1141		
Total	14	3567.452	254.818		

Root Mean Square Error	9.545371
Mean of Dependent Variable	15.16867
Coefficient of Variation	.6292821
R Squared	0.7446
Adjusted R Squared	0.6424

----------Multiple Regression----------

Date/Time 12-28-1996 12:58:45
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC14 created 12-28-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.823335	0.0000	.762399	2.39	0.0481		
NCONTSUR	.7440E-01	4.9409	.3145E-01	2.37	0.0499	0.1176	0.1176
SRNACTUA	.6179E-01	0.6057	.4462E-01	1.38	0.2087	0.1461	0.1387
SRNCNSUR	-.7784737	-5.1084	.3317689	-2.35	0.0514	0.5221	0.0749

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.8019	.8019		
Model	3	.2266758	.0755586	2.55	0.139
Error	7	.2075242	2.964631E-02		
Total	10	.4342	.04342		

Root Mean Square Error	.172181
Mean of Dependent Variable	.27
Coefficient of Variation	.6377075
R Squared	0.5221
Adjusted R Squared	0.3172

----------Multiple Regression----------

Date/Time 12-07-1996 11:03:35
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC23 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.1071392	0.0000	.1326582	0.81	0.4784		
ENG WGT	-.163E-05	-0.8048	.2572E-05	-0.63	0.5710	0.0433	0.0433
WETAREA	.2702E-05	0.6874	.4694E-05	0.58	0.6052	0.0613	0.0530
NENGINES	.2324E-01	1.5957	.1049E-01	2.22	0.1134	0.7983	0.5891
LOGENGWT	-.132E-01	-0.4768	.1650E-01	-0.80	0.4819	0.8458	0.0234
LNENGS	-.228E-01	-0.4461	.4099E-01	-0.56	0.6173	0.8602	0.4009

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.0081	.0081		
Model	5	6.365211E-03	1.273042E-03	3.69	0.156
Error	3	1.034789E-03	3.449297E-04		
Total	8	.0074	.000925		

Root Mean Square Error	1.857228E-02
Mean of Dependent Variable	.03
Coefficient of Variation	.6190761
R Squared	0.8602
Adjusted R Squared	0.6271

----------Multiple Regression----------

Date/Time 12-07-1996 11:00:58
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC23 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	26.14948	0.0000	4.89051	5.35	0.0011		
ENG WGT	.1860E-03	2.0799	.5814E-04	3.20	0.0151	0.0889	0.0889
SRDRYWGT	-.101E-01	-1.1234	.5472E-02	-1.84	0.1079	0.1758	0.1400
NENGINES	-1.438636	-1.9391	.4155517	-3.46	0.0105	0.1782	0.0316
LOGENGWT	-2.433565	-1.8947	.6276618	-3.88	0.0061	0.4411	0.2294
LNENGS	6.216931	2.4143	1.513704	4.11	0.0045	0.8361	0.0080

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	412.0597	412.0597		
Model	5	17.91282	3.582565	7.14	0.011
Error	7	3.511976	.5017109		
Total	12	21.4248	1.7854		

Root Mean Square Error	.7083155
Mean of Dependent Variable	5.63
Coefficient of Variation	.1258109
R Squared	0.8361
Adjusted R Squared	0.7190

----------Multiple Regression----------

Date/Time 12-29-1996 11:12:56
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC23 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.606385	0.0000	.1090331	14.73	0.0000		
DRYWGT	.4057E-05	3.3630	.1245E-05	3.26	0.0225	0.0154	0.0154
LEN+WING	-.274E-02	-2.9929	.8999E-03	-3.04	0.0287	0.0580	0.0325
ENG WGT	-.642E-05	-0.7964	.6080E-05	-1.06	0.3390	0.0622	0.0280
LNENGS	.2624266	1.1676	.1010673	2.60	0.0485	0.4251	0.0019
NAVIONIC	-.138E-01	-0.8952	.4255E-02	-3.23	0.0231	0.8141	0.3200

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	16.66651	16.66651		
Model	5	.1270708	2.541416E-02	4.38	0.065
Error	5	.0290201	5.804019E-03		
Total	10	.1560909	1.560909E-02		

Root Mean Square Error	7.618411E-02
Mean of Dependent Variable	1.230909
Coefficient of Variation	6.189255E-02
R Squared	0.8141
Adjusted R Squared	0.6282

----------Multiple Regression----------

Date/Time 12-07-1996 11:05:21
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC23 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.577461	0.0000	.503596	3.13	0.0106		
ENG WGT	.5260E-05	0.7241	.4250E-05	1.24	0.2441	0.0940	0.0940
LDRYWGT	.9038E-01	1.0249	.5903E-01	1.53	0.1567	0.1025	0.0972
LOGENGWT	-.2679183	-2.6283	.9488E-01	-2.82	0.0180	0.3754	0.1862
LNENGS	.1404058	0.6999	.6871E-01	2.04	0.0682	0.5594	0.0023

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.416807	1.416807		
Model	4	8.060009E-02	2.015002E-02	3.17	0.063
Error	10	6.349324E-02	6.349324E-03		
Total	14	.1440933	1.029238E-02		

Root Mean Square Error	7.968265E-02
Mean of Dependent Variable	.3073333
Coefficient of Variation	.2592711
R Squared	0.5594
Adjusted R Squared	0.3831

----------Multiple Regression----------

Date/Time 12-07-1996 11:19:17
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC24 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	145.5179	0.0000	19.50756	7.46	0.0003		
MAX KVA	.6962885	2.8552	.1479245	4.71	0.0033	0.0288	0.0288
SRDRYWGT	-.8916444	-3.6797	.1757755	-5.07	0.0023	0.5564	0.1753
LNENGS	53.80975	0.8874	17.78104	3.03	0.0232	0.8244	0.0683

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	28246.04	28246.04		
Model	3	9062.612	3020.871	9.39	0.011
Error	6	1930.276	321.7127		
Total	9	10992.89	1221.432		

Root Mean Square Error	17.93635
Mean of Dependent Variable	53.147
Coefficient of Variation	.3374857
R Squared	0.8244
Adjusted R Squared	0.7366

----------Multiple Regression----------

Date/Time 12-29-1996 11:19:18
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC23 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.6011225	0.0000	.2822642	2.13	0.0621		
LDRYWGT	-.0517665	-0.1743	.2844E-01	-1.82	0.1021	0.3114	0.3114
ENG WGT	.1778E-04	1.5702	.2532E-05	7.02	0.0001	0.6705	0.6190
NENGINES	-.616E-01	-0.6666	.0135766	-4.54	0.0014	0.8998	0.0361

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2632693	.2632693		
Model	3	.2946343	9.821143E-02	26.95	0.000
Error	9	3.279647E-02	3.644052E-03		
Total	12	.3274308	.0272859		

Root Mean Square Error	6.036599E-02
Mean of Dependent Variable	.1423077
Coefficient of Variation	.4241934
R Squared	0.8998
Adjusted R Squared	0.8664

----------Multiple Regression----------

Date/Time 12-29-1996 11:25:17
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC24 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.6256481	0.0000	.6574861	-0.95	0.3850		
MAX KVA	.1268E-02	2.4409	.4179E-03	3.04	0.0289	0.0399	0.0399
LDRYWGT	-.2986119	-4.2166	.1166746	-2.56	0.0507	0.0409	0.0344
LLENWING	.843599	6.9112	.2311323	3.65	0.0148	0.3484	0.0698
SRWETARA	-.702E-02	-4.5969	.2543E-02	-2.76	0.0398	0.7420	0.0295

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.05929	.05929		
Model	4	3.755017E-02	9.387543E-03	3.59	0.097
Error	5	1.305983E-02	2.611966E-03		
Total	9	.05061	5.623333E-03		

Root Mean Square Error	.0511074
Mean of Dependent Variable	.077
Coefficient of Variation	.6637325
R Squared	0.7420
Adjusted R Squared	0.5355

----------Multiple Regression----------

Date/Time 12-07-1996 11:21:49
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC24 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-16.56729	0.0000	1.798697	-9.21	0.0000		
MAX KVA	-.151E-01	-1.3129	.1477E-02	-10.23	0.0000	0.0001	0.0001
LOGENGWT	2.69463	1.6471	.2099532	12.83	0.0000	0.9592	0.3499

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	407.5546	407.5546		
Model	2	21.19986	10.59993	82.37	0.000
Error	7	.9007796	.1286828		
Total	9	22.10064	2.455627		

Root Mean Square Error	.3587239
Mean of Dependent Variable	6.384
Coefficient of Variation	5.619108E-02
R Squared	0.9592
Adjusted R Squared	0.9476

----------Multiple Regression----------

Date/Time 12-29-1996 11:32:28
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC24 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.5649629	0.0000	.4102496	-1.38	0.2176		
MAX KVA	-.686E-03	-0.7621	.2717E-03	-2.53	0.0450	0.0379	0.0379
LLENWING	.4136638	2.1045	.8931E-01	4.63	0.0036	0.6045	0.1129
ENG WGT	-.104E-04	-1.2877	.4038E-05	-2.58	0.0415	0.8128	0.0011

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	17.26596	17.26596		
Model	3	.1141523	3.805076E-02	8.68	0.013
Error	6	2.628772E-02	4.381286E-03		
Total	9	.14044	1.560444E-02		

Root Mean Square Error	6.619129E-02
Mean of Dependent Variable	1.314
Coefficient of Variation	5.037389E-02
R Squared	0.8128
Adjusted R Squared	0.7192

----------Multiple Regression----------

Date/Time 12-29-1996 11:29:04
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC24 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.8093584	0.0000	.2682805	3.02	0.0235		
MAX KVA	.7339E-03	1.4491	.2056E-03	3.57	0.0118	0.0613	0.0613
LDRYWGT	-.422E-01	-0.6317	.2706E-01	-1.56	0.1698	0.3391	0.0052
BTU COOL	-.762E-03	-0.9407	.2483E-03	-3.07	0.0220	0.7427	0.1295

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.37641	1.37641		
Model	3	3.259855E-02	1.086618E-02	5.77	0.033
Error	6	1.129145E-02	1.881908E-03		
Total	9	.04389	4.876667E-03		

Root Mean Square Error	4.338097E-02
Mean of Dependent Variable	.371
Coefficient of Variation	.1169298
R Squared	0.7427
Adjusted R Squared	0.6141

----------Multiple Regression----------
Date/Time 12-07-1996 11:33:22
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC41 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	82.69054	0.0000	23.51844	3.52	0.0126		
DRYWGT	-.302E-03	-2.4059	.1715E-03	-1.76	0.1290	0.1243	0.1243
WETAREA	.3301E-02	2.7220	.1767E-02	1.87	0.1110	0.2095	0.0938
BTU COOL	.1363E-01	0.0932	.8786E-01	0.16	0.8818	0.6112	0.3371
LBTUCOOL	-15.57444	-1.0837	6.946777	-2.24	0.0662	0.7884	0.5840

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2925.525	2925.525		
Model	4	1250.124	312.531	5.59	0.032
Error	6	335.4878	55.91462		
Total	10	1585.612	158.5612		

Root Mean Square Error	7.477608
Mean of Dependent Variable	16.30818
Coefficient of Variation	.4585188
R Squared	0.7884
Adjusted R Squared	0.6474

----------Multiple Regression----------
Date/Time 12-29-1996 11:38:26
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC24 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.885E-01	0.0000	.4460E-01	-1.98	0.1040		
SRWETARA	-.593E-03	-1.9904	.2106E-03	-2.81	0.0374	0.0584	0.0584
LBTUCOOL	.2802E-01	1.1550	.1033E-01	2.71	0.0422	0.3053	0.0446
NFUELTNK	.4361E-02	1.1970	.2031E-02	2.15	0.0846	0.6386	0.0052

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	5.877778E-03	5.877778E-03		
Model	3	1.035918E-03	3.45306E-04	2.94	0.138
Error	5	5.863042E-04	1.172608E-04		
Total	8	1.622222E-03	2.027778E-04		

Root Mean Square Error	.0108287
Mean of Dependent Variable	2.555555E-02
Coefficient of Variation	.4237319
R Squared	0.6386
Adjusted R Squared	0.4217

----------Multiple Regression----------
Date/Time 12-29-1996 11:47:36
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC41 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.2484566	0.0000	.5511E-01	4.51	0.0020		
BTU COOL	.1198E-02	1.9506	.1576E-03	7.61	0.0001	0.6191	0.6191
LBTUCOOL	-.0791897	-1.2817	.1585E-01	-5.00	0.0011	0.9076	0.2394

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.528182E-02	1.528182E-02		
Model	2	2.597343E-02	1.298672E-02	39.28	0.000
Error	8	2.644749E-03	3.305937E-04		
Total	10	2.861818E-02	2.861818E-03		

Root Mean Square Error	1.818223E-02
Mean of Dependent Variable	3.727273E-02
Coefficient of Variation	.4878161
R Squared	0.9076
Adjusted R Squared	0.8845

----------Multiple Regression----------
Date/Time 12-07-1996 11:36:51
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC41 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.9370181	0.0000	2.059222	-0.46	0.6651		
SRDRYWGT	-.144E-01	-1.2950	.4725E-02	-3.05	0.0226	0.1112	0.1112
LBTUCOOL	-.1509505	-0.0830	.4960315	-0.30	0.7712	0.1135	0.0564
SRNCNSUR	2.445504	1.8967	.4709626	5.19	0.0020	0.8386	0.4627

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	378.8402	378.8402		
Model	3	20.62237	6.874124	10.39	0.009
Error	6	3.967878	.661313		
Total	9	24.59025	2.73225		

Root Mean Square Error	.8132115
Mean of Dependent Variable	6.155
Coefficient of Variation	.1321221
R Squared	0.8386
Adjusted R Squared	0.7580

----------Multiple Regression----------

Date/Time 12-29-1996 11:57:10
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC41 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-17.58278	0.0000	2.354919	-7.47	0.0007		
BTU COOL	.8182E-02	4.9745	.8422E-03	9.72	0.0002	0.2045	0.2045
NAVIONIC	-.8833301	-33.5977	.111506	-7.92	0.0005	0.2229	0.0854
SRFUSVOL	-.124E-02	-0.6738	.3933E-03	-3.16	0.0250	0.3813	0.0498
LBTUCOOL	-.6839761	-4.1385	.8142E-01	-8.40	0.0004	0.4451	0.1570
SRNAVION	8.686999	34.0620	1.080125	8.04	0.0005	0.9602	0.0918

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	18.85091	18.85091		
Model	5	.1982689	3.965379E-02	24.11	0.002
Error	5	8.22197E-03	1.644394E-03		
Total	10	.2064909	2.064909E-02		

Root Mean Square Error	4.055113E-02
Mean of Dependent Variable	1.309091
Coefficient of Variation	3.097655E-02
R Squared	0.9602
Adjusted R Squared	0.9204

----------Multiple Regression----------

Date/Time 12-29-1996 11:50:43
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC41 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.743896	0.0000	.521216	3.35	0.0204		
BTU COOL	.1270E-02	1.2635	.4928E-03	2.58	0.0496	0.0204	0.0204
LDRYWGT	-.1702316	-2.0794	.0595745	-2.86	0.0355	0.1009	0.0104
NFUELTNK	.3254E-01	1.4438	.1202E-01	2.71	0.0425	0.6352	0.0283

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.8587111	.8587111		
Model	3	3.728181E-02	1.242727E-02	2.90	0.141
Error	5	2.140708E-02	4.281416E-03		
Total	8	5.868889E-02	7.336111E-03		

Root Mean Square Error	6.543253E-02
Mean of Dependent Variable	.3088889
Coefficient of Variation	.2118319
R Squared	0.6352
Adjusted R Squared	0.4164

----------Multiple Regression----------

Date/Time 12-07-1996 11:39:33
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC42 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	78.91598	0.0000	29.32054	2.69	0.0310		
DRYWGT	-.851E-03	-4.2969	.3499E-03	-2.43	0.0453	0.0318	0.0318
WETAREA	.5901E-02	3.0731	.3006E-02	1.96	0.0904	0.1652	0.0147
MAX KVA	.2233814	1.5825	.1115863	2.00	0.0854	0.3806	0.0016
LBTUCOOL	-14.8529	-0.6542	7.11883	-2.09	0.0754	0.6181	0.1933

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	6825.87	6825.87		
Model	4	2463.385	615.8463	2.83	0.109
Error	7	1522.089	217.4413		
Total	11	3985.474	362.3159		

Root Mean Square Error	14.74589
Mean of Dependent Variable	23.85
Coefficient of Variation	.6182764
R Squared	0.6181
Adjusted R Squared	0.3999

----------Multiple Regression----------

Date/Time 12-29-1996 11:59:32
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC41 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.984071	0.0000	.9123752	2.17	0.0726		
BTU COOL	-.239E-03	-0.3691	.3946E-03	-0.60	0.5676	0.3813	0.3813
NAVIONIC	.9287E-01	10.9556	.3969E-01	2.34	0.0579	0.4829	0.2606
LBTUCOOL	.6051E-01	0.9310	.4104E-01	1.47	0.1908	0.4859	0.3756
SRNAVION	-.9043291	-10.7056	.3978515	-2.27	0.0634	0.7238	0.2370

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	4.712727E-02	4.712727E-02		
Model	4	2.292343E-02	5.730857E-03	3.93	0.067
Error	6	8.749302E-03	1.458217E-03		
Total	10	3.167273E-02	3.167273E-03		

Root Mean Square Error	3.818661E-02
Mean of Dependent Variable	6.545454E-02
Coefficient of Variation	.5834065
R Squared	0.7238
Adjusted R Squared	0.5396

----------Multiple Regression----------

Date/Time 12-29-1996 12:23:00
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC42 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-1.973472	0.0000	1.253919	-1.57	0.1595		
NAVIONIC	-.133043	-5.9912	.6460E-01	-2.06	0.0784	0.0825	0.0825
SRNAVION	1.104771	5.3975	.5672172	1.95	0.0925	0.2888	0.0560
MAX KVA	.1165E-02	0.9361	.8241E-03	1.41	0.2004	0.3474	0.0294
ENG WGT	-.694E-05	-0.5977	.6090E-05	-1.14	0.2923	0.4494	0.0772

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.7600333	.7600333		
Model	4	.1467649	3.669123E-02	1.43	0.319
Error	7	.1798018	2.568597E-02		
Total	11	.3265667	2.968788E-02		

Root Mean Square Error	.1602684
Mean of Dependent Variable	.2516667
Coefficient of Variation	.6368281
R Squared	0.4494
Adjusted R Squared	0.1348

----------Multiple Regression----------

Date/Time 12-07-1996 11:43:30
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC42 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-5.619715	0.0000	32.06829	-0.18	0.8667		
WETAREA	-.675E-03	-3.0004	.4787E-03	-1.41	0.2085	0.0988	0.0988
MAX KVA	.8777E-01	5.3888	.6849E-01	1.28	0.2473	0.1052	0.1045
SRMAXKVA	-1.777954	-4.0864	1.50583	-1.18	0.2824	0.2535	0.1560
LDRYWGT	4.294688	2.2191	3.156562	1.36	0.2225	0.2693	0.1642
NAVIONIC	.311111	1.0459	1.272721	0.24	0.8150	0.4848	0.2197
SRNAVION	-5.900684	-2.1552	11.39325	-0.52	0.6231	0.5068	0.2518

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	665.5939	665.5939		
Model	6	29.827	4.971167	1.03	0.487
Error	6	29.02432	4.837387		
Total	12	58.85132	4.904277		

Root Mean Square Error	2.199406
Mean of Dependent Variable	7.155385
Coefficient of Variation	.3073777
R Squared	0.5068
Adjusted R Squared	0.0136

----------Multiple Regression----------

Date/Time 12-29-1996 12:31:17
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC42 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	2.87821	0.0000	.7599711	3.79	0.0068		
MAX KVA	-.648E-02	-2.1027	.2860E-02	-2.27	0.0579	0.1245	0.1245
AVCSWGT	.4500E-02	7.5671	.1335E-02	3.37	0.0119	0.1807	0.1366
SRAVWGT	-.3260182	-8.3920	.9510E-01	-3.43	0.0110	0.6469	0.2464
LOG KVA	1.096732	2.3965	.5164552	2.12	0.0713	0.7853	0.3060

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	31.16963	31.16963		
Model	4	1.654207	.4135517	6.40	0.017
Error	7	.4523601	6.462287E-02		
Total	11	2.106567	.1915061		

Root Mean Square Error	.2542103
Mean of Dependent Variable	1.611667
Coefficient of Variation	.1577313
R Squared	0.7853
Adjusted R Squared	0.6626

----------Multiple Regression----------

Date/Time 12-29-1996 12:29:31
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC42 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.683225	0.0000	.178947	3.82	0.0041		
MAX KVA	-.300E-04	-0.0294	.2618E-03	-0.11	0.9112	0.0732	0.0732
AVCSWGT	.4447E-05	0.0394	.1074E-03	0.04	0.9679	0.4844	0.4754
SRAVWGT	-.710E-02	-0.7457	.9301E-02	-0.76	0.4645	0.5158	0.5148

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.234777	2.234777		
Model	3	.1192195	3.973984E-02	3.20	0.077
Error	9	.1119036	1.243373E-02		
Total	12	.2311231	1.926026E-02		

Root Mean Square Error	.1115066
Mean of Dependent Variable	.4146154
Coefficient of Variation	.2689399
R Squared	0.5158
Adjusted R Squared	0.3544

----------Multiple Regression----------

Date/Time 12-07-1996 11:55:53
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC44 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	3.186264	0.0000	1.127981	2.82	0.0256		
SRDRYWGT	.2249E-01	3.3452	.7151E-02	3.14	0.0163	0.5368	0.5368
LEN+WING	-.130E-01	-1.7150	.6932E-02	-1.88	0.1019	0.6484	0.4219
SRMAXKVA	-.1676534	-0.8351	.1015224	-1.65	0.1426	0.7455	0.3420
LBTUCOOL	-.2488953	-0.2186	.2973929	-0.84	0.4303	0.7687	0.1337

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	148.7552	148.7552		
Model	4	7.702371	1.925593	5.82	0.022
Error	7	2.317921	.3311315		
Total	11	10.02029	.9109356		

Root Mean Square Error	.5754403
Mean of Dependent Variable	3.520833
Coefficient of Variation	.1634387
R Squared	0.7687
Adjusted R Squared	0.6365

----------Multiple Regression----------

Date/Time 12-29-1996 12:36:24
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC42 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.1027452	0.0000	.9478E-01	-1.08	0.3278		
MAX KVA	-.400E-03	-1.2646	.1813E-03	-2.20	0.0787	0.0255	0.0255
LOG KVA	.5690E-01	1.2145	.2607E-01	2.18	0.0809	0.2132	0.0032
NENGINES	-.396E-01	-0.8444	.1582E-01	-2.50	0.0542	0.4931	0.1522
NFUELTNK	.8760E-02	0.7391	.4607E-02	1.90	0.1156	0.7058	0.0203

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.03249	.03249		
Model	4	1.384104E-02	3.460261E-03	3.00	0.130
Error	5	5.768956E-03	1.153791E-03		
Total	9	.01961	2.178889E-03		

Root Mean Square Error	.0339675
Mean of Dependent Variable	.057
Coefficient of Variation	.5959211
R Squared	0.7058
Adjusted R Squared	0.4705

----------Multiple Regression----------

Date/Time 12-29-1996 12:44:45
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC44 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.512029	0.0000	.6402645	2.36	0.0562		
LDRYWGT	-.7794584	-5.4330	.2489323	-3.13	0.0203	0.0650	0.0650
LLENWING	1.136732	4.7758	.3675547	3.09	0.0213	0.1050	0.0861
SRNAVION	.2792147	1.3455	.8435E-01	3.31	0.0162	0.5701	0.1485
BTU COOL	.8045E-03	0.5112	.5091E-03	1.58	0.1651	0.6965	0.1007

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.224445	1.224445		
Model	4	.1182965	2.957412E-02	3.44	0.086
Error	6	5.155806E-02	8.593009E-03		
Total	10	.1698546	1.698546E-02		

Root Mean Square Error	9.269849E-02
Mean of Dependent Variable	.3336364
Coefficient of Variation	.2778429
R Squared	0.6965
Adjusted R Squared	0.4941

----------Multiple Regression----------

Date/Time 12-29-1996 12:42:40
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC44 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.3131552	0.0000	.1260434	2.48	0.0378		
SRNAVION	-.660E-01	-0.5432	.2709E-01	-2.44	0.0407	0.0088	0.0088
BTU COOL	.8541E-03	0.9414	.2022E-03	4.22	0.0029	0.6931	0.4653

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	8.204546E-02	8.204546E-02		
Model	2	4.037757E-02	2.018879E-02	9.03	0.009
Error	8	1.787698E-02	2.234622E-03		
Total	10	5.825454E-02	5.825454E-03		

Root Mean Square Error	4.727179E-02
Mean of Dependent Variable	8.636364E-02
Coefficient of Variation	.5473576
R Squared	0.6931
Adjusted R Squared	0.6164

----------Multiple Regression----------

Date/Time 12-29-1996 12:50:58
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC44 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.680E-01	0.0000	.7559E-01	-0.90	0.3980		
LDRYWGT	.8596E-02	0.7030	.8127E-02	1.06	0.3253	0.2834	0.2834
MAX KVA	.2559E-04	0.2527	.5445E-04	0.47	0.6526	0.3993	0.3991
LNENGS	-.567E-02	-0.2144	.1131E-01	-0.50	0.6315	0.4824	0.0171
AVCSWGT	-.484E-05	-0.4314	.4160E-05	-1.16	0.2828	0.5662	0.0196

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	3.333333E-03	3.333333E-03		
Model	4	1.283488E-03	3.20872E-04	2.28	0.160
Error	7	9.831785E-04	1.404541E-04		
Total	11	2.266667E-03	2.060606E-04		

Root Mean Square Error	1.185133E-02
Mean of Dependent Variable	1.666667E-02
Coefficient of Variation	.71108
R Squared	0.5662
Adjusted R Squared	0.3184

----------Multiple Regression----------

Date/Time 12-29-1996 12:46:12
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC44 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.9642529	0.0000	.5372853	-1.79	0.1229		
LDRYWGT	.8258702	6.6716	.2178244	3.79	0.0091	0.1841	0.1841
LLENWING	-1.044801	-5.2757	.3145493	-3.32	0.0160	0.2104	0.1550
SRNAVION	-.2204609	-1.0564	.6401E-01	-3.44	0.0137	0.5707	0.0069
LBTUCOOL	-.990E-01	-0.7320	.4214E-01	-2.35	0.0571	0.7764	0.0175

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	14.38695	14.38695		
Model	4	.1073385	2.683464E-02	5.21	0.037
Error	6	3.091599E-02	5.152665E-03		
Total	10	.1382545	1.382545E-02		

Root Mean Square Error	7.178207E-02
Mean of Dependent Variable	1.143636
Coefficient of Variation	6.276652E-02
R Squared	0.7764
Adjusted R Squared	0.6273

----------Multiple Regression----------

Date/Time 12-07-1996 12:01:54
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC45 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.5773E-01	0.0000	1.576261	0.04	0.9717		
LEN+WING	.7288E-01	6.2206	.1725E-01	4.22	0.0029	0.0144	0.0144
LNHYDR	2.590398	1.0759	.6462392	4.01	0.0039	0.1195	0.1137
SRDRYWGT	-.727E-01	-6.7572	.1678E-01	-4.33	0.0025	0.7369	0.0030

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	291.6588	291.6588		
Model	3	17.92054	5.973515	7.47	0.010
Error	8	6.398656	.799832		
Total	11	24.3192	2.210836		

Root Mean Square Error	.8943332
Mean of Dependent Variable	4.93
Coefficient of Variation	.1814063
R Squared	0.7369
Adjusted R Squared	0.6382

----------Multiple Regression----------

Date/Time 12-07-1996 12:00:00
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC45 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1242.955	0.0000	132.3861	9.39	0.0002		
LEN+WING	.6811313	3.4266	.8990E-01	7.58	0.0006	0.1475	0.1475
LNHYDR	-15.61132	-0.3720	4.856594	-3.21	0.0236	0.1679	0.0974
LDRYWGT	-125.4467	-5.0005	13.95304	-8.99	0.0003	0.6362	0.2826
NCONTSUR	2.713299	1.4413	.4753977	5.71	0.0023	0.9516	0.1237

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	5485.901	5485.901		
Model	4	6093.106	1523.276	24.57	0.002
Error	5	309.9992	61.99984		
Total	9	6403.105	711.4561		

Root Mean Square Error	7.873998
Mean of Dependent Variable	23.422
Coefficient of Variation	.3361796
R Squared	0.9516
Adjusted R Squared	0.9129

----------Multiple Regression----------

Date/Time 12-29-1996 13:02:15
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC45 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.3381566	0.0000	.145986	2.32	0.0537		
NAVIONIC	.1551E-01	0.9418	.3758E-02	4.13	0.0044	0.4495	0.4495
LBTUCOOL	-.511E-01	-0.4112	.2804E-01	-1.82	0.1111	0.6427	0.0192
LNHYDR	-.531E-01	-0.2962	.039909	-1.33	0.2252	0.7148	0.0080

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.050909	1.050909		
Model	3	8.541233E-02	2.847078E-02	5.85	0.025
Error	7	3.407858E-02	4.868369E-03		
Total	10	.1194909	1.194909E-02		

Root Mean Square Error	.0697737
Mean of Dependent Variable	.3090909
Coefficient of Variation	.2257384
R Squared	0.7148
Adjusted R Squared	0.5926

----------Multiple Regression----------

Date/Time 12-29-1996 13:00:24
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC45 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.1197675	0.0000	.0383952	3.12	0.0206		
NHYDRLIC	-.649E-03	-0.2938	.5088E-03	-1.28	0.2490	0.0247	0.0247
NAVIONIC	-.515E-02	-0.6456	.1522E-02	-3.39	0.0147	0.2494	0.1872
BTU COOL	.6213E-03	0.9555	.1529E-03	4.06	0.0066	0.7999	0.3518

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.03481	.03481		
Model	3	1.798908E-02	5.99636E-03	7.99	0.016
Error	6	4.500919E-03	7.501532E-04		
Total	9	.02249	2.498889E-03		

Root Mean Square Error	2.738892E-02
Mean of Dependent Variable	.059
Coefficient of Variation	.4642191
R Squared	0.7999
Adjusted R Squared	0.6998

----------Multiple Regression----------

Date/Time 12-29-1996 17:28:23
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC47 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	6.26048	0.0000	.8373911	7.48	0.0000		
WETAREA	.3445E-04	1.0991	.9365E-05	3.68	0.0051	0.1708	0.1708
LDRYWGT	-.4785398	-1.7142	.8341E-01	-5.74	0.0003	0.8220	0.5542

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	21.36001	21.36001		
Model	2	.8792422	.4396211	20.78	0.000
Error	9	.1904495	2.116106E-02		
Total	11	1.069692	.0972447		

Root Mean Square Error	.1454684
Mean of Dependent Variable	1.334167
Coefficient of Variation	.1090332
R Squared	0.8220
Adjusted R Squared	0.7824

----------Multiple Regression----------

Date/Time 12-29-1996 13:07:32
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC45 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.5803087	0.0000	.2268373	2.56	0.0376		
NHYDRLIC	.1271E-02	0.3350	.9731E-03	1.31	0.2328	0.4057	0.4057
LBTUCOOL	-.852E-03	-0.0067	.4096E-01	-0.02	0.9840	0.5140	0.3354
LDRYWGT	.5031E-01	0.5970	.2831E-01	1.78	0.1188	0.6651	0.5825

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	15.41095	15.41095		
Model	3	4.406511E-02	1.468837E-02	4.63	0.043
Error	7	2.218944E-02	3.16992E-03		
Total	10	6.625455E-02	6.625455E-03		

Root Mean Square Error	5.630204E-02
Mean of Dependent Variable	1.183636
Coefficient of Variation	4.756701E-02
R Squared	0.6651
Adjusted R Squared	0.5216

----------Multiple Regression----------

Date/Time 12-07-1996 12:14:37
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC49 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1310.701	0.0000	220.362	5.95	0.0006		
DRYWGT	.1762E-02	1.8515	.1083E-02	1.63	0.1479	0.2070	0.2070
WETAREA	-.132E-01	-1.4321	.1093E-01	-1.21	0.2664	0.2476	0.1764
LDRYWGT	-336.7541	-4.1983	60.36231	-5.58	0.0008	0.6133	0.4487
LLENWING	466.4085	3.2408	112.7905	4.14	0.0044	0.8877	0.2699

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	89674.59	89674.59		
Model	4	83689.5	20922.38	13.83	0.002
Error	7	10590.5	1512.929		
Total	11	94280	8570.909		

Root Mean Square Error	38.89639
Mean of Dependent Variable	86.44583
Coefficient of Variation	.449951
R Squared	0.8877
Adjusted R Squared	0.8235

----------Multiple Regression----------

Date/Time 12-29-1996 17:34:56
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC47 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.4717E-02	0.0000	.3497E-02	1.35	0.2261		
NWHEELS	.1003E-02	1.0675	.2764E-03	3.63	0.0110	0.4969	0.4969
NCONTSUR	-.297E-03	-0.5704	.1532E-03	-1.94	0.1005	0.6907	0.0117

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.777778E-04	2.777778E-04		
Model	2	2.916354E-04	1.458177E-04	6.70	0.030
Error	6	1.305868E-04	2.176447E-05		
Total	8	4.222222E-04	5.277778E-05		

Root Mean Square Error	4.665241E-03
Mean of Dependent Variable	5.555556E-03
Coefficient of Variation	.8397434
R Squared	0.6907
Adjusted R Squared	0.5876

----------Multiple Regression----------

Date/Time 12-29-1996 17:39:26
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC49 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.2227935	0.0000	.9951E-01	2.24	0.0491		
WETAREA	.3354E-04	2.8994	.1122E-04	2.99	0.0136	0.3637	0.3637
SRWETARA	-.558E-02	-2.3469	.2307E-02	-2.42	0.0361	0.5987	0.2401

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	5.046923E-02	5.046923E-02		
Model	2	9.329492E-02	4.664746E-02	7.46	0.010
Error	10	6.253585E-02	6.253585E-03		
Total	12	.1558308	.0129859		

Root Mean Square Error	7.907961E-02
Mean of Dependent Variable	6.230769E-02
Coefficient of Variation	1.269179
R Squared	0.5987
Adjusted R Squared	0.5184

----------Multiple Regression----------

Date/Time 12-07-1996 12:19:52
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC49 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	6.099256	0.0000	11.06718	0.55	0.6015		
DRYWGT	.6047E-04	4.7471	.2337E-04	2.59	0.0414	0.0945	0.0945
LDRYWGT	-3.356953	-3.1208	1.123906	-2.99	0.0244	0.6631	0.0048
LLENWING	8.079001	4.0804	4.310466	1.87	0.1100	0.6900	0.0008
SRWETARA	-.1418747	-5.3984	.8529E-01	-1.66	0.1473	0.7878	0.0206

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	258.8445	258.8445		
Model	4	13.31217	3.328043	5.57	0.032
Error	6	3.585518	.5975863		
Total	10	16.89769	1.689769		

Root Mean Square Error	.7730371
Mean of Dependent Variable	4.850909
Coefficient of Variation	.1593592
R Squared	0.7878
Adjusted R Squared	0.6464

----------Multiple Regression----------

Date/Time 12-29-1996 18:57:51
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC49 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.300972	0.0000	.126096	10.32	0.0001		
LEN+WING	.1410E-01	8.6533	.2718E-02	5.19	0.0035	0.0001	0.0001
SRWETARA	-.384E-01	-9.0188	.7421E-02	-5.18	0.0035	0.7896	0.0117
SRNCNSUR	.0543802	0.3943	.4060E-01	1.34	0.2381	0.8452	0.0078

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	13.9876	13.9876		
Model	3	.1888093	6.293642E-02	9.10	0.018
Error	5	3.459075E-02	6.918149E-03		
Total	8	.2234	.027925		

Root Mean Square Error	8.317541E-02
Mean of Dependent Variable	1.246667
Coefficient of Variation	6.671824E-02
R Squared	0.8452
Adjusted R Squared	0.7523

----------Multiple Regression----------

Date/Time 12-29-1996 18:53:50
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC49 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.1755959	0.0000	.8788E-01	2.00	0.0927		
DRYWGT	-.445E-05	-6.3112	.1577E-05	-2.82	0.0303	0.0588	0.0588
LEN+WING	-.636E-02	-12.1294	.2207E-02	-2.88	0.0280	0.0691	0.0415
WETAREA	.4896E-04	7.1571	.1672E-04	2.93	0.0263	0.3399	0.0800
SRWETARA	.1600E-01	11.4244	.6478E-02	2.47	0.0485	0.6726	0.0537

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.7436	.7436		
Model	4	3.618784E-02	9.046959E-03	3.08	0.106
Error	6	1.761216E-02	2.935361E-03		
Total	10	.0538	.00538		

Root Mean Square Error	5.417897E-02
Mean of Dependent Variable	.26
Coefficient of Variation	.2083806
R Squared	0.6726
Adjusted R Squared	0.4544

----------Multiple Regression----------

Date/Time 12-07-1996 12:23:07
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC51 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	14.44539	0.0000	4.45188	3.24	0.0118		
LEN+WING	.1641908	1.7336	.4888E-01	3.36	0.0099	0.0661	0.0661
MAX KVA	-.1219897	-1.2613	.3719E-01	-3.28	0.0112	0.5345	0.0122
NENGINES	12.61076	1.7059	3.922109	3.22	0.0123	0.5537	0.2864
LNENGS	-49.39702	-1.9562	15.49703	-3.19	0.0129	0.8034	0.1261

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	6565.509	6565.509		
Model	4	1708.823	427.2059	8.17	0.006
Error	8	418.1463	52.26829		
Total	12	2126.97	177.2475		

Root Mean Square Error	7.229681
Mean of Dependent Variable	22.47308
Coefficient of Variation	.3217041
R Squared	0.8034
Adjusted R Squared	0.7051

----------Multiple Regression----------

Date/Time 12-29-1996 18:59:33
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC49 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.221E-01	0.0000	.1028E-01	-2.15	0.0603		
LEN+WING	-.777E-03	-4.5097	.3990E-03	-1.95	0.0834	0.4742	0.4742
SRWETARA	.2375E-02	5.2165	.1055E-02	2.25	0.0508	0.6638	0.5221

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.003675	.003675		
Model	2	3.600853E-03	1.800426E-03	8.88	0.007
Error	9	1.824147E-03	2.02683E-04		
Total	11	.005425	4.931818E-04		

Root Mean Square Error	1.423668E-02
Mean of Dependent Variable	.0175
Coefficient of Variation	.8135245
R Squared	0.6638
Adjusted R Squared	0.5890

----------Multiple Regression----------

Date/Time 12-30-1996 08:49:37
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC51 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.9542511	0.0000	.5123072	-1.86	0.1048		
NENGINES	-.363E-01	-0.4799	.3528E-01	-1.03	0.3378	0.0166	0.0166
NAVIONIC	-.0207781	-1.1519	.8190E-02	-2.54	0.0388	0.1391	0.1344
LDRYWGT	.1692868	1.4201	.6521E-01	2.60	0.0356	0.5359	0.0014
SRAVWGT	-.431E-02	-0.4680	.3562E-02	-1.21	0.2656	0.6161	0.1579

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2465333	.2465333		
Model	4	.1327545	3.318862E-02	2.81	0.111
Error	7	8.271218E-02	1.181603E-02		
Total	11	.2154667	1.958788E-02		

Root Mean Square Error	.1087015
Mean of Dependent Variable	.1433333
Coefficient of Variation	.7583829
R Squared	0.6161
Adjusted R Squared	0.3968

----------Multiple Regression----------

Date/Time 12-07-1996 12:27:35
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC51 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.6565653	0.0000	1.653707	0.40	0.7006		
LEN+WING	-.1077489	-6.6744	.5049E-01	-2.13	0.0616	0.1444	0.1444
MAX KVA	-.269E-01	-1.7759	.1046E-01	-2.58	0.0299	0.2226	0.0463
SRWETARA	.3733535	8.6768	.1512923	2.47	0.0357	0.5363	0.1585

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	425.1104	425.1104		
Model	3	27.36245	9.120816	3.47	0.064
Error	9	23.65732	2.628591		
Total	12	51.01977	4.251648		

Root Mean Square Error	1.621293
Mean of Dependent Variable	5.718462
Coefficient of Variation	.2835191
R Squared	0.5363
Adjusted R Squared	0.3817

----------Multiple Regression----------

Date/Time 12-30-1996 08:53:50
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC51 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.3795676	0.0000	.7057304	-0.54	0.6074		
NAVIONIC	-.343E-01	-1.2617	.0112824	-3.04	0.0190	0.1748	0.1748
SRAVWGT	-.553E-02	-0.3990	.4907E-02	-1.13	0.2970	0.2532	0.1833
LDRYWGT	.2673044	1.4898	.8984E-01	2.98	0.0206	0.5835	0.0081
NENGINES	-.069853	-0.6136	.0486062	-1.44	0.1938	0.6784	0.0347

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	21.20021	21.20021		
Model	4	.3311327	8.278317E-02	3.69	0.064
Error	7	.156959	2.242271E-02		
Total	11	.4880917	4.437197E-02		

Root Mean Square Error	.1497422
Mean of Dependent Variable	1.329167
Coefficient of Variation	.1126587
R Squared	0.6784
Adjusted R Squared	0.4947

----------Multiple Regression----------

Date/Time 12-30-1996 08:51:37
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC51 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.517539	0.0000	.0991245	5.22	0.0004		
NAVIONIC	.1295E-01	0.5857	.4063E-02	3.19	0.0097	0.0467	0.0467
SRAVWGT	-.102E-01	-0.8996	.2077E-02	-4.90	0.0006	0.7194	0.4342

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.429569	2.429569		
Model	2	.2339584	.1169792	12.82	0.002
Error	10	.0912724	9.12724E-03		
Total	12	.3252308	2.710257E-02		

Root Mean Square Error	9.553659E-02
Mean of Dependent Variable	.4323077
Coefficient of Variation	.2209921
R Squared	0.7194
Adjusted R Squared	0.6632

----------Multiple Regression----------

Date/Time 12-07-1996 12:29:43
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC52 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	394.4675	0.0000	106.5453	3.70	0.0208		
DRYWGT	-.513E-02	-10.2202	.1655E-02	-3.10	0.0362	0.2968	0.2968
LEN+WING	1.765792	4.4475	.5889719	3.00	0.0400	0.2981	0.2797
SRMAXKVA	-96.6567	-9.0444	26.94276	-3.59	0.0230	0.3313	0.3292
MAX KVA	4.561273	12.4072	1.31194	3.48	0.0254	0.5709	0.2700
NCONTSUR	8.28962	2.3112	3.290238	2.52	0.0654	0.8341	0.2364

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	31682.26	31682.26		
Model	5	20351.17	4070.234	4.02	0.101
Error	4	4047.437	1011.859		
Total	9	24398.61	2710.956		

Root Mean Square Error	31.80974
Mean of Dependent Variable	56.287
Coefficient of Variation	.5651347
R Squared	0.8341
Adjusted R Squared	0.6268

----------Multiple Regression----------

Date/Time 12-30-1996 09:02:10
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC52 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.4289121	0.0000	.2713842	1.58	0.1580		
WETAREA	-.895E-05	-0.5098	.6148E-05	-1.46	0.1888	0.2383	0.2383
BTU COOL	.2967E-02	1.3799	.7225E-03	4.11	0.0045	0.7071	0.5871
SRNAVION	-.1044104	-0.3625	.0577113	-1.81	0.1134	0.8004	0.0005

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.3044455	.3044455		
Model	3	.26194	8.731332E-02	9.36	0.008
Error	7	6.531455E-02	9.330651E-03		
Total	10	.3272545	3.272545E-02		

Root Mean Square Error	.0965953
Mean of Dependent Variable	.1663636
Coefficient of Variation	.5806274
R Squared	0.8004
Adjusted R Squared	0.7149

----------Multiple Regression----------

Date/Time 12-30-1996 08:57:47
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC51 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.220E-02	0.0000	.2461E-01	-0.09	0.9316		
SRAVWGT	-.180E-02	-1.5259	.7355E-03	-2.44	0.0504	0.0899	0.0899
NENGINES	.6921E-02	0.8429	.4402E-02	1.57	0.1669	0.1700	0.0105
LBTUCOOL	.015255	0.8150	.6890E-02	2.21	0.0687	0.5432	0.0447

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.004	.004		
Model	3	1.30376E-03	4.345867E-04	2.38	0.169
Error	6	1.09624E-03	1.827067E-04		
Total	9	.0024	2.666667E-04		

Root Mean Square Error	.0135169
Mean of Dependent Variable	.02
Coefficient of Variation	.6758452
R Squared	0.5432
Adjusted R Squared	0.3149

----------Multiple Regression----------

Date/Time 12-07-1996 12:32:25
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC52 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-11.3697	0.0000	3.970233	-2.86	0.0242		
MAX KVA	-.195E-01	-1.4752	.4190E-02	-4.65	0.0023	0.0350	0.0350
SRNACTUA	1.216838	1.2285	.2349807	5.18	0.0013	0.6185	0.3835
LLENWING	2.667226	0.8464	.8136409	3.28	0.0135	0.8495	0.1859

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	445.3273	445.3273		
Model	3	29.36585	9.788617	13.17	0.003
Error	7	5.201766	.7431094		
Total	10	34.56762	3.456762		

Root Mean Square Error	.8620379
Mean of Dependent Variable	6.362727
Coefficient of Variation	.1354824
R Squared	0.8495
Adjusted R Squared	0.7850

----------Multiple Regression----------

Date/Time 12-30-1996 09:08:21
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC52 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.674327	0.0000	1.797738	0.93	0.4044		
LOGENGWT	-.1009309	-0.2133	.2310914	-0.44	0.6848	0.2500	0.2500
BTU COOL	.3319E-02	0.8212	.1417E-02	2.34	0.0792	0.6332	0.6295
NFUELTNK	.4385E-01	0.3425	.5354E-01	0.82	0.4587	0.6859	0.1696

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	18.63551	18.63551		
Model	3	.6691701	.2230567	2.91	0.164
Error	4	.3064174	7.660436E-02		
Total	7	.9755875	.1393696		

Root Mean Square Error	.2767749
Mean of Dependent Variable	1.52625
Coefficient of Variation	.1813431
R Squared	0.6859
Adjusted R Squared	0.4504

----------Multiple Regression----------

Date/Time 12-07-1996 12:42:38
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC61 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-101912.2	0.0000	50080.1	-2.03	0.0813		
DRYWGT	-.1588318	-4.1187	.9442E-01	-1.68	0.1364	0.0051	0.0051
LEN+WING	-218.2638	-7.5874	102.8178	-2.12	0.0714	0.0552	0.0000
WETAREA	2.992846	8.0233	1.445561	2.07	0.0772	0.1573	0.0002
SRNAVION	-7758.855	-1.7080	3119.598	-2.49	0.0418	0.2336	0.1368
LDRYWGT	15888.59	4.9483	7062.363	2.25	0.0592	0.5552	0.0022

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	3.940917E+07	3.940917E+07		
Model	5	8.994058E+07	1.798812E+07	1.75	0.242
Error	7	7.206001E+07	1.029429E+07		
Total	12	1.620006E+08	1.350005E+07		

Root Mean Square Error	3208.471
Mean of Dependent Variable	1741.113
Coefficient of Variation	1.84277
R Squared	0.5552
Adjusted R Squared	0.2375

----------Multiple Regression----------

Date/Time 12-30-1996 09:06:36
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC52 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.5771112	0.0000	.4272021	1.35	0.2254		
LOGENGWT	-.1744821	-1.0192	.4603E-01	-3.79	0.0091	0.3119	0.3119
BTU COOL	-.486E-02	-2.0660	.1600E-02	-3.04	0.0228	0.3168	0.0661
LBTUCOOL	.4509164	2.4988	.1333025	3.38	0.0148	0.7650	0.0180

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.59201	1.59201		
Model	3	.1544414	5.148048E-02	6.51	0.026
Error	6	4.744856E-02	7.908093E-03		
Total	9	.20189	2.243222E-02		

Root Mean Square Error	8.892746E-02
Mean of Dependent Variable	.399
Coefficient of Variation	.2228758
R Squared	0.7650
Adjusted R Squared	0.6475

----------Multiple Regression----------

Date/Time 12-30-1996 09:10:55
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC52 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.3780E-01	0.0000	.1168299	0.32	0.7594		
LOGENGWT	-.933E-02	-0.2730	.0150928	-0.62	0.5635	0.2600	0.2600
BTU COOL	.2879E-03	0.8696	.9177E-04	3.14	0.0258	0.6925	0.6834
NFUELTNK	.3398E-02	0.4197	.3145E-02	1.08	0.3293	0.7507	0.1661

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.844445E-03	2.844445E-03		
Model	3	4.921261E-03	1.64042E-03	5.02	0.057
Error	5	1.634295E-03	3.268589E-04		
Total	8	6.555555E-03	8.194444E-04		

Root Mean Square Error	1.807924E-02
Mean of Dependent Variable	1.777778E-02
Coefficient of Variation	1.016957
R Squared	0.7507
Adjusted R Squared	0.6011

----------Multiple Regression----------

Date/Time 12-30-1996 09:15:31
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC61 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.1266862	0.0000	.2861522	-0.44	0.6765		
LBTUCOOL	.3222874	1.2986	.5319E-01	6.06	0.0018	0.7053	0.7053
LDRYWGT	-.1084637	-0.6303	.3688E-01	-2.94	0.0322	0.8920	0.0992

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2775125	.2775125		
Model	2	.2126468	.1063234	20.65	0.004
Error	5	2.574069E-02	5.148138E-03		
Total	7	.2383875	3.405536E-02		

Root Mean Square Error	7.175053E-02
Mean of Dependent Variable	.18625
Coefficient of Variation	.3852378
R Squared	0.8920
Adjusted R Squared	0.8488

----------Multiple Regression----------

Date/Time 12-07-1996 12:43:37
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC61 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-100030.4	0.0000	45311.54	-2.21	0.0694		
DRYWGT	-.1831307	-4.6723	.8513E-01	-2.15	0.0750	0.0014	0.0014
LEN+WING	-366.247	-12.4660	120.9125	-3.03	0.0231	0.0577	0.0016
WETAREA	2.713633	7.1230	1.31411	2.06	0.0845	0.1409	0.0003
SRNAVION	-8669.787	-1.8687	2804.377	-3.09	0.0213	0.2070	0.1063
LDRYWGT	15303.56	4.6667	6408.23	2.39	0.0542	0.5678	0.0000
SRWETARA	522.9166	6.6776	307.961	1.70	0.1404	0.7081	0.0018

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	3.098098E+07	3.098098E+07		
Model	6	1.196495E+08	1.994159E+07	2.43	0.153
Error	6	4.933E+07	8221666		
Total	12	1.689795E+08	1.408163E+07		

Root Mean Square Error	2867.345
Mean of Dependent Variable	1543.746
Coefficient of Variation	1.857394
R Squared	0.7081
Adjusted R Squared	0.4161

----------Multiple Regression----------

Date/Time 12-31-1996 08:49:45
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC61 created 12-31-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	12.60766	0.0000	2.73866	4.60	0.0441		
LDRYWGT	-.9753645	-2.5134	.2598202	-3.75	0.0642	0.1635	0.1635
NAVIONIC	-.262023	-4.7651	.5180E-01	-5.06	0.0369	0.2970	0.0016
AVCSWGT	.1841E-02	2.5822	.4440E-03	4.15	0.0536	0.3872	0.2005
MAX KVA	.2482E-01	7.1677	.5129E-02	4.84	0.0401	0.9518	0.1676

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	16.41691	16.41691		
Model	4	.7523743	.1880936	9.87	0.094
Error	2	.0381114	.0190557		
Total	6	.7904857	.1317476		

Root Mean Square Error	.1380424
Mean of Dependent Variable	1.531429
Coefficient of Variation	9.013962E-02
R Squared	0.9518
Adjusted R Squared	0.8554

----------Multiple Regression----------

Date/Time 12-30-1996 09:21:20
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC61 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	22591	0.0000	9721.8	2.32	0.0531		
BTU COOL	35.75389	0.7321	27.5611	1.30	0.2357	0.0467	0.0467
AVCSWGT	1.912822	0.5720	.9028068	2.12	0.0719	0.2482	0.1191
LBTUCOOL	-6251.534	-1.2805	2787.103	-2.24	0.0598	0.5626	0.1671

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	3.636884E+07	3.636884E+07		
Model	3	9.203441E+07	3.067814E+07	3.00	0.105
Error	7	7.155676E+07	1.022239E+07		
Total	10	1.635912E+08	1.635912E+07		

Root Mean Square Error	3197.248
Mean of Dependent Variable	1818.312
Coefficient of Variation	1.758361
R Squared	0.5626
Adjusted R Squared	0.3751

----------Multiple Regression----------

Date/Time 12-07-1996 12:50:10
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC62 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	2558.263	0.0000	4338.836	0.59	0.5811		
DRYWGT	-.794E-02	-5.2133	.5595E-02	-1.42	0.2153	0.1296	0.1296
WETAREA	.6017E-01	3.9895	.4995E-01	1.20	0.2823	0.1428	0.1163
NAVIONIC	141.8619	6.0754	192.1572	0.74	0.4935	0.4633	0.0039
SRNAVION	-1152.883	-4.9564	1829.868	-0.63	0.5563	0.5028	0.0063

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	427778.2	427778.2		
Model	4	111544.7	27886.17	1.26	0.393
Error	5	110309.3	22061.87		
Total	9	221854	24650.45		

Root Mean Square Error	148.5324
Mean of Dependent Variable	206.828
Coefficient of Variation	.7181444
R Squared	0.5028
Adjusted R Squared	0.1050

----------Multiple Regression----------

Date/Time 12-30-1996 09:24:25
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC62 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-1.067518	0.0000	.2845859	-3.75	0.0133		
MAX KVA	-.969E-03	-0.7968	.3301E-03	-2.94	0.0324	0.0026	0.0026
LBTUCOOL	.3105685	1.2340	.6828E-01	4.55	0.0061	0.8059	0.4709

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.36125	.36125		
Model	2	.1975546	9.877729E-02	10.38	0.017
Error	5	4.759542E-02	9.519085E-03		
Total	7	.24515	3.502143E-02		

Root Mean Square Error	.0975658
Mean of Dependent Variable	.2125
Coefficient of Variation	.4591332
R Squared	0.8059
Adjusted R Squared	0.7282

----------Multiple Regression----------

Date/Time 12-31-1996 08:58:11
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC61 created 12-31-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.635E-01	0.0000	.2088E-01	-3.04	0.0384		
LDRYWGT	.0078232	0.9055	.1976E-02	3.96	0.0167	0.4991	0.4991
AVCSWGT	-.871E-05	-0.5955	.3346E-05	-2.60	0.0598	0.8141	0.0858

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.0007	.0007		
Model	2	4.884828E-04	2.442414E-04	8.76	0.035
Error	4	1.115172E-04	2.787931E-05		
Total	6	.0006	.0001		

Root Mean Square Error	5.280086E-03
Mean of Dependent Variable	.01
Coefficient of Variation	.5280086
R Squared	0.8141
Adjusted R Squared	0.7212

----------Multiple Regression----------

Date/Time 12-07-1996 12:51:06
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC62 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-58.19208	0.0000	16.21222	-3.59	0.0157		
WETAREA	.6982E-04	0.4744	.3355E-04	2.08	0.0920	0.0852	0.0852
NAVIONIC	-2.984188	-12.7819	.6749248	-4.42	0.0069	0.3873	0.3696
SRNAVION	27.73597	11.8892	6.629328	4.18	0.0086	0.8639	0.3240

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	263.3047	263.3047		
Model	3	16.52271	5.507572	10.58	0.013
Error	5	2.603575	.5207149		
Total	8	19.12629	2.390786		

Root Mean Square Error	.7216058
Mean of Dependent Variable	5.408889
Coefficient of Variation	.1334111
R Squared	0.8639
Adjusted R Squared	0.7822

----------Multiple Regression----------

Date/Time 12-30-1996 09:38:24
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC62 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.4660959	0.0000	.4276238	-1.09	0.3370		
AVCSWGT	.3094E-03	0.6960	.8831E-04	3.50	0.0248	0.2020	0.2020
MAX KVA	-.207E-02	-1.1344	.4928E-03	-4.21	0.0136	0.3526	0.0379
LBTUCOOL	.3758432	0.9932	.9620E-01	3.91	0.0174	0.8656	0.1117

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	15.3458	15.3458		
Model	3	.4797024	.1599008	8.59	0.032
Error	4	7.449756E-02	1.862439E-02		
Total	7	.5542	7.917143E-02		

Root Mean Square Error	.1364712
Mean of Dependent Variable	1.385
Coefficient of Variation	9.853517E-02
R Squared	0.8656
Adjusted R Squared	0.7648

----------Multiple Regression----------

Date/Time 12-30-1996 09:37:53
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC62 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.258671	0.0000	.4456846	2.82	0.0665		
NAVIONIC	-.104E-01	-0.5847	.9665E-02	-1.08	0.3595	0.0104	0.0104
AVCSWGT	-.139E-03	-0.7345	.5614E-04	-2.47	0.0902	0.4304	0.2987
MAX KVA	.1207E-02	1.5555	.5491E-03	2.20	0.1153	0.5524	0.0709
LBTUCOOL	-.1318625	-0.8212	.7419E-01	-1.78	0.1736	0.7820	0.0010

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.1552	1.1552		
Model	4	7.804272E-02	1.951068E-02	2.69	0.221
Error	3	2.175728E-02	7.252426E-03		
Total	7	.0998	1.425714E-02		

Root Mean Square Error	8.516118E-02
Mean of Dependent Variable	.38
Coefficient of Variation	.2241084
R Squared	0.7820
Adjusted R Squared	0.4913

----------Multiple Regression----------

Date/Time 12-07-1996 12:58:10
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC63 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-16.30454	0.0000	170.9276	-0.10	0.9277		
LEN+WING	.7428459	3.4986	.2223171	3.34	0.0205	0.1013	0.1013
LDRYWGT	-88.47093	-3.7211	31.46954	-2.81	0.0375	0.1127	0.0689
NAVIONIC	-37.4368	-10.5274	8.981561	-4.17	0.0088	0.1596	0.0014
SRNAVION	367.4024	11.3432	90.74159	4.05	0.0098	0.8036	0.0087

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	25805.38	25805.38		
Model	4	5813.824	1453.456	5.11	0.051
Error	5	1421.052	284.2104		
Total	9	7234.876	803.8751		

Root Mean Square Error	16.85854
Mean of Dependent Variable	50.799
Coefficient of Variation	.3318676
R Squared	0.8036
Adjusted R Squared	0.6464

----------Multiple Regression----------

Date/Time 12-30-1996 09:40:37
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC62 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.517E-02	0.0000	.1981E-02	-2.61	0.0478		
AVCSWGT	.2463E-05	0.4409	.1289E-05	1.91	0.1144	0.4452	0.4452
MAX KVA	.1409E-04	0.6131	.5306E-05	2.66	0.0451	0.7699	0.6020

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.0000125	.0000125		
Model	2	6.736421E-05	3.36821E-05	8.36	0.025
Error	5	2.013579E-05	4.027159E-06		
Total	7	.0000875	.0000125		

Root Mean Square Error	2.006778E-03
Mean of Dependent Variable	.00125
Coefficient of Variation	1.605423
R Squared	0.7699
Adjusted R Squared	0.6778

----------Multiple Regression----------

Date/Time 12-30-1996 09:43:06
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC63 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.658319	0.0000	.4912679	-1.34	0.2513		
LDRYWGT	.1718479	1.0735	.6603E-01	2.60	0.0599	0.2158	0.2158
AVCSWGT	-.185E-03	-0.6832	.7788E-04	-2.38	0.0760	0.5827	0.1733
LBTUCOOL	-.1209152	-0.5237	.9116E-01	-1.33	0.2554	0.7102	0.0194

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.272012	1.272012		
Model	3	.1465018	4.883393E-02	3.27	0.141
Error	4	.0597857	1.494643E-02		
Total	7	.2062875	2.946964E-02		

Root Mean Square Error	.1222556
Mean of Dependent Variable	.39875
Coefficient of Variation	.3065971
R Squared	0.7102
Adjusted R Squared	0.4928

----------Multiple Regression----------

Date/Time 12-07-1996 13:01:39
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC63 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	4.764295	0.0000	2.168263	2.20	0.0640		
LDRYWGT	.8900077	0.8873	.3200502	2.78	0.0273	0.0866	0.0866
SRNAVION	-1.89846	-1.4409	.4203897	-4.52	0.0027	0.7666	0.5088

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	272.5884	272.5884		
Model	2	9.696367	4.848184	11.50	0.006
Error	7	2.952122	.4217318		
Total	9	12.64849	1.405388		

Root Mean Square Error	.6494088
Mean of Dependent Variable	5.221
Coefficient of Variation	.124384
R Squared	0.7666
Adjusted R Squared	0.6999

----------Multiple Regression----------

Date/Time 12-30-1996 09:49:00
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC63 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.0952877	0.0000	.094468	-1.01	0.3702		
AVCSWGT	-.660E-04	-4.0377	.5901E-04	-1.12	0.3258	0.0634	0.0634
NFUELTNK	.2522E-02	0.8731	.8856E-03	2.85	0.0465	0.6127	0.4414
SRAVWGT	.4739E-02	3.5998	.4718E-02	1.00	0.3720	0.6907	0.0633

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.00045	.00045		
Model	3	5.180053E-04	1.726684E-04	2.98	0.160
Error	4	2.319947E-04	5.799868E-05		
Total	7	.00075	1.071429E-04		

Root Mean Square Error	7.615686E-03
Mean of Dependent Variable	.0075
Coefficient of Variation	1.015425
R Squared	0.6907
Adjusted R Squared	0.4587

----------Multiple Regression----------

Date/Time 12-30-1996 09:47:12
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC63 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.4701223	0.0000	.5139216	-0.91	0.4121		
LBTUCOOL	.350944	0.7582	.1068113	3.29	0.0303	0.5880	0.5880
NFUELTNK	.3804E-01	0.4463	.1967E-01	1.93	0.1252	0.7871	0.2125

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	14.5152	14.5152		
Model	2	.4395167	.2197583	7.39	0.045
Error	4	.1188833	2.972082E-02		
Total	6	.5584	9.306666E-02		

Root Mean Square Error	.1723973
Mean of Dependent Variable	1.44
Coefficient of Variation	.1197203
R Squared	0.7871
Adjusted R Squared	0.6807

----------Multiple Regression----------

Date/Time 12-07-1996 13:15:03
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC64 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	8.504835	0.0000	.885901	9.60	0.0001		
WETAREA	.2471E-04	0.2321	.2491E-04	0.99	0.3595	0.1901	0.1901
NAVIONIC	-.1743829	-1.0322	.3952E-01	-4.41	0.0045	0.8092	0.7779

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	164.4379	164.4379		
Model	2	8.104455	4.052228	12.72	0.007
Error	6	1.910767	.3184612		
Total	8	10.01522	1.251903		

Root Mean Square Error	.5643237
Mean of Dependent Variable	4.274445
Coefficient of Variation	.1320227
R Squared	0.8092
Adjusted R Squared	0.7456

----------Multiple Regression----------

Date/Time 12-07-1996 13:09:07
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC64 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	72.46441	0.0000	15.95848	4.54	0.0105		
WETAREA	.7000E-02	7.3250	.3191E-02	2.19	0.0933	0.0208	0.0208
SRMAXKVA	-3.9605	-1.9528	1.900579	-2.08	0.1056	0.5018	0.1193
SRFUSVOL	-.6565725	-5.6250	.4008368	-1.64	0.1768	0.7018	0.0371

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	5123.756	5123.756		
Model	3	555.3162	185.1054	3.14	0.149
Error	4	235.9363	58.98408		
Total	7	791.2526	113.0361		

Root Mean Square Error	7.68011
Mean of Dependent Variable	25.3075
Coefficient of Variation	.3034717
R Squared	0.7018
Adjusted R Squared	0.4782

----------Multiple Regression----------

Date/Time 12-30-1996 09:54:37
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC64 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.276326	0.0000	.7428E-01	17.18	0.0004		
NFUELTNK	-.342E-01	-1.1399	.3103E-02	-11.02	0.0016	0.6293	0.6293
MAX KVA	.5962E-03	0.8063	.9495E-04	6.28	0.0082	0.6299	0.3311
LBTUCOOL	-.1437098	-0.8279	.0156087	-9.21	0.0027	0.9873	0.4366

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.168514	1.168514		
Model	3	7.966495E-02	2.655499E-02	78.04	0.002
Error	3	1.020764E-03	3.402548E-04		
Total	6	8.068571E-02	1.344762E-02		

Root Mean Square Error	.018446
Mean of Dependent Variable	.4085714
Coefficient of Variation	4.514755E-02
R Squared	0.9873
Adjusted R Squared	0.9747

----------Multiple Regression----------

Date/Time 12-30-1996 09:53:29
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC64 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.635E-02	0.0000	.3602608	-0.02	0.9868		
LDRYWGT	-.1158091	-0.7083	.3858E-01	-3.00	0.0399	0.0131	0.0131
MAX KVA	-.564E-03	-0.4948	.2539E-03	-2.22	0.0904	0.0238	0.0221
LBTUCOOL	.3353275	1.4221	.3470E-01	9.66	0.0006	0.9599	0.3207

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2592	.2592		
Model	3	.2065699	6.885662E-02	31.91	0.003
Error	4	8.630155E-03	2.157539E-03		
Total	7	.2152	3.074286E-02		

Root Mean Square Error	4.644931E-02
Mean of Dependent Variable	.18
Coefficient of Variation	.2580517
R Squared	0.9599
Adjusted R Squared	0.9298

----------Multiple Regression----------

Date/Time 12-29-1996 13:56:24
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC45 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-2.957897	0.0000	.8249162	-3.59	0.0116		
LEN+WING	-.305E-02	-4.0716	.7530E-03	-4.05	0.0067	0.0007	0.0007
LDRYWGT	.3086173	3.3132	.0908564	3.40	0.0146	0.3133	0.0206
NHYDRLIC	.3515E-02	0.7998	.1120E-02	3.14	0.0201	0.6915	0.0911
LBTUCOOL	.5396E-01	0.4940	.3084E-01	1.75	0.1308	0.7957	0.1370

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.1656818	.1656818		
Model	4	7.337689E-02	1.834422E-02	5.84	0.029
Error	6	.0188413	3.140216E-03		
Total	10	9.221818E-02	9.221818E-03		

Root Mean Square Error	5.603763E-02
Mean of Dependent Variable	.1227273
Coefficient of Variation	.4566029
R Squared	0.7957
Adjusted R Squared	0.6595

----------Multiple Regression----------

Date/Time 12-30-1996 09:55:41
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC64 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	3.556334	0.0000	.7637862	4.66	0.0056		
LBTUCOOL	.6440702	1.1936	.1419783	4.54	0.0062	0.0693	0.0693
LDRYWGT	-.4782521	-1.2781	.9845E-01	-4.86	0.0046	0.8373	0.1675

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	13.03051	13.03051		
Model	2	.9436	.4718	12.86	0.011
Error	5	.1833875	.0366775		
Total	7	1.126987	.1609982		

Root Mean Square Error	.1915137
Mean of Dependent Variable	1.27625
Coefficient of Variation	.1500597
R Squared	0.8373
Adjusted R Squared	0.7722

----------Multiple Regression----------

Date/Time 12-07-1996 12:06:05
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC46 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	13.49779	0.0000	.9186894	14.69	0.0000		
NENGINES	1.348879	0.8728	.2755784	4.89	0.0018	0.0000	0.0000
LNFUELTK	-4.355387	-1.2849	.604412	-7.21	0.0002	0.8812	0.4746

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	679.6354	679.6354		
Model	2	21.88982	10.94491	25.96	0.001
Error	7	2.950819	.4215455		
Total	9	24.84064	2.760071		

Root Mean Square Error	.6492654
Mean of Dependent Variable	8.244
Coefficient of Variation	7.875612E-02
R Squared	0.8812
Adjusted R Squared	0.8473

----------Multiple Regression----------

Date/Time 12-07-1996 12:04:28
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC46 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	146.1571	0.0000	54.89093	2.66	0.0562		
DRYWGT	-.395E-03	-4.2632	.1604E-03	-2.46	0.0694	0.1685	0.1685
LEN+WING	.5670E-01	0.7886	.2202624	0.26	0.8096	0.1694	0.1595
NENGINES	-15.92196	-1.8842	5.016549	-3.17	0.0337	0.5222	0.3122
LNFUELTK	4.343258	0.2187	7.104953	0.61	0.5740	0.5251	0.1080
LDRYWGT	-15.85614	-1.9923	6.670985	-2.38	0.0762	0.7227	0.2347
SRWETARA	1.161767	6.1222	.908313	1.28	0.2700	0.8032	0.1773

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1753.423	1753.423		
Model	6	698.6569	116.4428	2.72	0.176
Error	4	171.2018	42.80045		
Total	10	869.8586	86.98586		

Root Mean Square Error	6.542206
Mean of Dependent Variable	12.62545
Coefficient of Variation	.5181758
R Squared	0.8032
Adjusted R Squared	0.5080

----------Multiple Regression----------

Date/Time 12-29-1996 14:04:52
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC46 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.8466034	0.0000	.2491843	3.40	0.0193		
LEN+WING	.5097E-03	1.6555	.2731E-03	1.87	0.1210	0.0492	0.0492
LDRYWGT	-.0775696	-2.3341	.2750E-01	-2.82	0.0371	0.5934	0.2020
LNFUELTK	.3296E-01	0.3972	.4010E-01	0.82	0.4486	0.6418	0.0102

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2773778	.2773778		
Model	3	9.384108E-03	3.128036E-03	2.99	0.135
Error	5	5.238115E-03	1.047623E-03		
Total	8	1.462222E-02	1.827778E-03		

Root Mean Square Error	3.236701E-02
Mean of Dependent Variable	.1755556
Coefficient of Variation	.184369
R Squared	0.6418
Adjusted R Squared	0.4268

----------Multiple Regression----------

Date/Time 12-29-1996 14:01:53
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC46 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.2210422	0.0000	.0831137	2.66	0.0375		
LDRYWGT	-.219E-01	-1.1110	.9641E-02	-2.27	0.0638	0.1207	0.1207
NFUELTNK	-.975E-03	-0.1563	.2504E-02	-0.39	0.7106	0.1228	0.0917
LNENGS	.6254E-01	1.1425	.2138E-01	2.93	0.0264	0.6385	0.0323

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.00841	.00841		
Model	3	3.377497E-03	1.125832E-03	3.53	0.088
Error	6	1.912503E-03	3.187505E-04		
Total	9	.00529	5.877778E-04		

Root Mean Square Error	1.785359E-02
Mean of Dependent Variable	.029
Coefficient of Variation	.6156409
R Squared	0.6385
Adjusted R Squared	0.4577

----------Multiple Regression----------

Date/Time 12-29-1996 14:08:57
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC46 created 12-29-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.1496979	0.0000	.8498E-01	-1.76	0.1215		
LNFUELTK	.0766132	0.3672	.4543E-01	1.69	0.1356	0.4161	0.4161
NHYDRLIC	.3494E-02	0.6279	.1212E-02	2.88	0.0235	0.7332	0.6247

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.10816	.10816		
Model	2	6.528072E-02	3.264036E-02	9.62	0.010
Error	7	2.375928E-02	3.394183E-03		
Total	9	.08904	9.893334E-03		

Root Mean Square Error	5.825962E-02
Mean of Dependent Variable	.104
Coefficient of Variation	.5601887
R Squared	0.7332
Adjusted R Squared	0.6569

Date/Time 12-29-1996 14:06:37
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC46 created 12-29-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	3.758581	0.0000	.9907608	3.79	0.0090		
LEN+WING	.1537E-02	0.9136	.9550E-03	1.61	0.1586	0.3985	0.3985
LDRYWGT	-.2329188	-1.2301	.1087785	-2.14	0.0760	0.6699	0.6017
NFUELTNK	-.0278441	-0.5075	.1800E-01	-1.55	0.1728	0.7641	0.5803

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	16.95204	16.95204		
Model	3	.3210261	.1070087	6.48	0.026
Error	6	9.913394E-02	1.652232E-02		
Total	9	.42016	4.668444E-02		

Root Mean Square Error	.1285392
Mean of Dependent Variable	1.302
Coefficient of Variation	9.872442E-02
R Squared	0.7641
Adjusted R Squared	0.6461

----------Multiple Regression----------

Date/Time 12-07-1996 12:11:17
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC47 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-30.79195	0.0000	11.50317	-2.68	0.0281		
DRYWGT	.1151E-03	6.8543	.2552E-04	4.51	0.0020	0.0076	0.0076
LLENWING	10.63146	4.1873	3.134784	3.39	0.0095	0.1376	0.0097
LNENGS	2.581297	0.8463	1.249032	2.07	0.0726	0.1494	0.0443
SRWETARA	-.3811291	-11.3578	.9020E-01	-4.23	0.0029	0.7368	0.0041

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	283.1422	283.1422		
Model	4	22.86222	5.715556	5.60	0.019
Error	8	8.167053	1.020882		
Total	12	31.02928	2.585773		

Root Mean Square Error	1.010387
Mean of Dependent Variable	4.666923
Coefficient of Variation	.2164996
R Squared	0.7368
Adjusted R Squared	0.6052

----------Multiple Regression----------

Date/Time 12-07-1996 12:09:55
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC47 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	104.2073	0.0000	17.50304	5.95	0.0010		
DRYWGT	-.408E-02	-10.6014	.7763E-03	-5.25	0.0019	0.1958	0.1958
LEN+WING	.443077	1.6268	.2014647	2.20	0.0702	0.2064	0.1530
WETAREA	.3430E-01	9.6758	.7737E-02	4.43	0.0044	0.3445	0.1672
LNENGS	-98.48364	-1.5927	19.05272	-5.17	0.0021	0.8798	0.2405

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	45102.09	45102.09		
Model	4	10872.79	2718.198	10.98	0.006
Error	6	1485.675	247.6125		
Total	10	12358.47	1235.847		

Root Mean Square Error	15.73571
Mean of Dependent Variable	64.03273
Coefficient of Variation	.2457448
R Squared	0.8798
Adjusted R Squared	0.7996

----------Multiple Regression----------

Date/Time 12-29-1996 17:26:59
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC47 created 12-29-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	3.547548	0.0000	.6938402	5.11	0.0014		
WETAREA	-.682E-04	-5.2455	.2217E-04	-3.08	0.0179	0.1140	0.1140
LDRYWGT	-.386834	-3.4483	.8714E-01	-4.44	0.0030	0.4187	0.3029
SRWETARA	.1578E-01	5.9018	.4852E-02	3.25	0.0140	0.6145	0.1446
SRFUSVOL	.3586E-02	2.2423	.1427E-02	2.51	0.0402	0.7974	0.0783

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.635408	1.635408		
Model	4	.1568334	3.920836E-02	6.89	0.014
Error	7	3.985823E-02	5.694033E-03		
Total	11	.1966917	1.788106E-02		

Root Mean Square Error	7.545881E-02
Mean of Dependent Variable	.3691667
Coefficient of Variation	.2044031
R Squared	0.7974
Adjusted R Squared	0.6816

----------Multiple Regression----------

Date/Time 12-29-1996 17:24:36
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC47 created 12-29-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.740088	0.0000	.3041977	5.72	0.0003		
WETAREA	.1423E-04	1.4111	.3402E-05	4.18	0.0024	0.0382	0.0382
LDRYWGT	-.1635881	-1.8210	.3030E-01	-5.40	0.0004	0.7731	0.3318

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	8.003333E-02	8.003333E-02		
Model	2	8.563421E-02	4.281711E-02	15.33	0.001
Error	9	2.513245E-02	2.792495E-03		
Total	11	.1107667	.0100697		

Root Mean Square Error	5.284406E-02
Mean of Dependent Variable	8.166666E-02
Coefficient of Variation	.6470702
R Squared	0.7731
Adjusted R Squared	0.7227

----------Multiple Regression----------

Date/Time 12-07-1996 13:23:04
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC66 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	52599.77	0.0000	24537.7	2.14	0.1653		
DRYWGT	.1087968	11.1988	.0397036	2.74	0.1114	0.0056	0.0056
LEN+WING	84.23343	10.5537	37.50711	2.25	0.1538	0.0375	0.0164
WETAREA	-1.550392	-15.9185	.5739482	-2.70	0.1141	0.3399	0.0225
LDRYWGT	-5892.454	-6.0234	2779.28	-2.12	0.1681	0.7967	0.0097

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	9527669	9527669		
Model	4	5758937	1439734	1.96	0.365
Error	2	1469226	734613.1		
Total	6	7228163	1204694		

Root Mean Square Error	857.0957
Mean of Dependent Variable	1166.66
Coefficient of Variation	.7346577
R Squared	0.7967
Adjusted R Squared	0.3902

----------Multiple Regression----------

Date/Time 12-30-1996 09:59:44
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC66 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-6.287994	0.0000	1.684935	-3.73	0.0649		
NAVIONIC	.110358	3.5780	.2679E-01	4.12	0.0542	0.2347	0.2347
MAX KVA	-.517E-02	-3.7711	.1404E-02	-3.68	0.0664	0.2901	0.0724
LBTUCOOL	.9239538	2.0369	.2605804	3.55	0.0712	0.9026	0.0081

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2204167	.2204167		
Model	3	.2020702	6.735673E-02	6.18	0.143
Error	2	2.181314E-02	1.090657E-02		
Total	5	.2238833	4.477667E-02		

Root Mean Square Error	.1044345
Mean of Dependent Variable	.1916667
Coefficient of Variation	.5448758
R Squared	0.9026
Adjusted R Squared	0.7564

----------Multiple Regression----------

Date/Time 12-30-1996 09:57:35
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC64 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.5943E-02	0.0000	.1527E-01	0.39	0.7170		
LDRYWGT	-.899E-02	-0.9012	.2122E-02	-4.24	0.0133	0.0639	0.0639
LBTUCOOL	.2249E-01	1.4821	.3229E-02	6.97	0.0022	0.9287	0.6089

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.0007	.0007		
Model	2	7.429545E-04	3.714773E-04	26.05	0.005
Error	4	5.704549E-05	1.426137E-05		
Total	6	.0008	1.333333E-04		

Root Mean Square Error	3.776423E-03
Mean of Dependent Variable	.01
Coefficient of Variation	.3776423
R Squared	0.9287
Adjusted R Squared	0.8930

----------Multiple Regression----------

Date/Time 12-07-1996 13:24:26
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC66 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	4.371002	0.0000	.7190347	6.08	0.0089		
DRYWGT	.1542E-03	6.5413	.2936E-04	5.25	0.0134	0.1358	0.1358
WETAREA	-.148E-02	-6.2350	.2949E-03	-5.01	0.0153	0.9077	0.0581

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	143.2771	143.2771		
Model	2	38.58363	19.29181	14.75	0.028
Error	3	3.924705	1.308235		
Total	5	42.50834	8.501667		

Root Mean Square Error	1.143781
Mean of Dependent Variable	4.886667
Coefficient of Variation	.2340616
R Squared	0.9077
Adjusted R Squared	0.8461

----------Multiple Regression----------

Date/Time 12-30-1996 10:04:20
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC66 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.177549	0.0000	.5679404	0.31	0.7750		
NFUELTNK	.1179416	0.9359	.6206E-01	1.90	0.1536	0.4151	0.4151
SRWETARA	-.0096139	-1.0135	.5259E-02	-1.83	0.1650	0.5415	0.0871
NAVIONIC	.4955E-01	0.7309	.3209E-01	1.54	0.2203	0.7445	0.3635

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	16.20321	16.20321		
Model	3	1.060697	.3535657	2.91	0.202
Error	3	.3639887	.1213296		
Total	6	1.424686	.2374476		

Root Mean Square Error	.3483239
Mean of Dependent Variable	1.521429
Coefficient of Variation	.2289453
R Squared	0.7445
Adjusted R Squared	0.4890

----------Multiple Regression----------

Date/Time 12-30-1996 10:00:30
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC66 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-2.767431	0.0000	.7618521	-3.63	0.0221		
LDRYWGT	.325154	1.8943	.7629E-01	4.26	0.0130	0.2621	0.2621
MAX KVA	-.190E-02	-1.5715	.5363E-03	-3.54	0.0241	0.8211	0.0090

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.690514	1.690514		
Model	2	.1764509	8.822547E-02	9.18	0.032
Error	4	3.843477E-02	9.608693E-03		
Total	6	.2148857	3.581429E-02		

Root Mean Square Error	9.802394E-02
Mean of Dependent Variable	.4914286
Coefficient of Variation	.1994673
R Squared	0.8211
Adjusted R Squared	0.7317

----------Multiple Regression----------

Date/Time 12-07-1996 13:27:36
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC71 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-302.1395	0.0000	152.0873	-1.99	0.1037		
DRYWGT	-.257E-02	-10.0150	.7796E-03	-3.30	0.0214	0.1610	0.1610
WETAREA	.2377E-01	9.3273	.7439E-02	3.20	0.0241	0.1648	0.1517
LDRYWGT	193.1428	8.5866	54.45288	3.55	0.0164	0.1649	0.1249
LLENWING	-315.0887	-7.5315	86.45154	-3.64	0.0148	0.3835	0.1787
SRAVWGT	-3.203539	-1.4319	1.098999	-2.91	0.0332	0.7716	0.0275

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	21081.82	21081.82		
Model	5	5279.754	1055.951	3.38	0.104
Error	5	1562.654	312.5308		
Total	10	6842.408	684.2408		

Root Mean Square Error	17.67854
Mean of Dependent Variable	43.77818
Coefficient of Variation	.4038208
R Squared	0.7716
Adjusted R Squared	0.5432

----------Multiple Regression----------

Date/Time 12-30-1996 10:06:02
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC66 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.1017225	0.0000	.8366E-02	-12.16	0.0012		
LDRYWGT	.1426E-01	1.4223	.9064E-03	15.73	0.0006	0.0052	0.0052
NFUELTNK	-.501E-02	-1.6758	.2703E-03	-18.54	0.0003	0.9914	0.2810

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.066667E-03	1.066667E-03		
Model	2	7.270205E-04	3.635103E-04	172.75	0.001
Error	3	6.312833E-06	2.104277E-06		
Total	5	7.333334E-04	1.466667E-04		

Root Mean Square Error	1.450613E-03
Mean of Dependent Variable	1.333333E-02
Coefficient of Variation	.1087959
R Squared	0.9914
Adjusted R Squared	0.9857

----------Multiple Regression----------

Date/Time 12-30-1996 10:07:22
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC71 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-1.251404	0.0000	.2508921	-4.99	0.0041		
MAX KVA	-.119E-02	-0.8996	.2910E-03	-4.09	0.0094	0.0002	0.0002
LBTUCOOL	.3524009	1.2861	.6020E-01	5.85	0.0021	0.8727	0.4458

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.2701125	.2701125		
Model	2	.2535951	.1267976	17.14	0.006
Error	5	3.699239E-02	7.398478E-03		
Total	7	.2905875	.0415125		

Root Mean Square Error	8.601441E-02
Mean of Dependent Variable	.18375
Coefficient of Variation	.4681056
R Squared	0.8727
Adjusted R Squared	0.8218

----------Multiple Regression----------

Date/Time 12-07-1996 13:31:24
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC71 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	18.96445	0.0000	13.31991	1.42	0.1975		
LDRYWGT	-7.809912	-5.3798	3.398064	-2.30	0.0551	0.0427	0.0427
LLENWING	13.80633	5.1968	6.210885	2.22	0.0616	0.2784	0.0087
SRWETARA	-.1946635	-5.5775	.1244844	-1.56	0.1619	0.2824	0.0163
SRDRYWGT	.6265E-01	5.6027	.0400689	1.56	0.1619	0.4682	0.0242

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	364.6519	364.6519		
Model	4	14.43276	3.608189	1.54	0.289
Error	7	16.39527	2.342181		
Total	11	30.82803	2.802548		

Root Mean Square Error	1.530419
Mean of Dependent Variable	5.5125
Coefficient of Variation	.277627
R Squared	0.4682
Adjusted R Squared	0.1643

----------Multiple Regression----------

Date/Time 12-30-1996 10:10:34
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC71 created 12-30-1996 .

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.6935	0.0000	.7044063	2.40	0.0613		
LBTUCOOL	.6651531	1.3086	.1737757	3.83	0.0123	0.2353	0.2353
LLENWING	-.6474951	-1.0914	.202827	-3.19	0.0242	0.7483	0.0108

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	16.18805	16.18805		
Model	2	.7482747	.3741373	7.43	0.032
Error	5	.2516753	5.033506E-02		
Total	7	.99995	.14285		

Root Mean Square Error	.2243548
Mean of Dependent Variable	1.4225
Coefficient of Variation	.1577186
R Squared	0.7483
Adjusted R Squared	0.6476

----------Multiple Regression----------

Date/Time 12-30-1996 10:10:16
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC71 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-.534E-01	0.0000	.2116044	-0.25	0.8172		
NENGINES	-.1532568	-1.6986	.0321753	-4.76	0.0176	0.4180	0.4180
LBTUCOOL	-.991E-01	-0.7635	.3813E-01	-2.60	0.0804	0.4191	0.2002
LLENWING	.2675398	1.7864	.6712E-01	3.99	0.0283	0.9077	0.0887

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.6128	1.6128		
Model	3	5.700499E-02	1.900166E-02	9.84	0.046
Error	3	5.795009E-03	1.93167E-03		
Total	6	.0628	1.046667E-02		

Root Mean Square Error	4.395077E-02
Mean of Dependent Variable	.48
Coefficient of Variation	.0915641
R Squared	0.9077
Adjusted R Squared	0.8154

----------Multiple Regression----------

Date/Time 12-07-1996 13:33:07
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC72 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-3844.079	0.0000	2327.59	-1.65	0.1497		
DRYWGT	-.116E-01	-6.4340	.5863E-02	-1.99	0.0941	0.0882	0.0882
WETAREA	.1621222	9.0905	.8048E-01	2.01	0.0906	0.1164	0.0738
LDRYWGT	538.1247	3.4850	289.7008	1.86	0.1126	0.1593	0.1269
LEN+WING	-7.981949	-5.7024	4.258135	-1.87	0.1100	0.1679	0.0937
SRAVWGT	-18.70913	-1.1836	7.628817	-2.45	0.0496	0.5844	0.2907

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	166835.6	166835.6		
Model	5	203834.6	40766.93	1.69	0.270
Error	6	144935.2	24155.87		
Total	11	348769.8	31706.35		

Root Mean Square Error	155.4216
Mean of Dependent Variable	117.9108
Coefficient of Variation	1.318128
R Squared	0.5844
Adjusted R Squared	0.2381

----------Multiple Regression----------

Date/Time 12-30-1996 10:13:28
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC71 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.3192E-01	0.0000	.5034E-01	0.63	0.5711		
LDRYWGT	-.729E-02	-1.0626	.5266E-02	-1.38	0.2603	0.1919	0.1919
LBTUCOOL	.9947E-02	1.0116	.3656E-02	2.72	0.0725	0.7339	0.6797
MAX KVA	.3920E-04	0.8143	.3648E-04	1.07	0.3613	0.8079	0.2911

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.285714E-04	2.285714E-04		
Model	3	3.00077E-04	1.000257E-04	4.21	0.134
Error	3	7.135156E-05	2.378385E-05		
Total	6	3.714286E-04	6.190476E-05		

Root Mean Square Error	4.876869E-03
Mean of Dependent Variable	5.714286E-03
Coefficient of Variation	.8534522
R Squared	0.8079
Adjusted R Squared	0.6158

----------Multiple Regression----------

Date/Time 12-30-1996 10:14:48
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC72 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-1.457341	0.0000	.3873819	-3.76	0.0131		
MAX KVA	-.152E-02	-0.9091	.4493E-03	-3.38	0.0198	0.0036	0.0036
LBTUCOOL	.4263893	1.2355	.9295E-01	4.59	0.0059	0.8087	0.3727

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.5618	.5618		
Model	2	.3728105	.1864052	10.57	0.016
Error	5	8.818954E-02	1.763791E-02		
Total	7	.461	6.585714E-02		

Root Mean Square Error	.1328078
Mean of Dependent Variable	.265
Coefficient of Variation	.5011614
R Squared	0.8087
Adjusted R Squared	0.7322

----------Multiple Regression----------

Date/Time 12-07-1996 13:34:06
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC72 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	104.5003	0.0000	19.82232	5.27	0.0033		
DRYWGT	.1479E-03	5.6585	.4911E-04	3.01	0.0297	0.0001	0.0001
WETAREA	-.286E-02	-11.1043	.6888E-03	-4.15	0.0089	0.1500	0.0019
LDRYWGT	-12.48084	-5.6296	2.482714	-5.03	0.0040	0.1500	0.0000
LEN+WING	.2140182	10.4827	.3752E-01	5.70	0.0023	0.7540	0.0212
SRAVWGT	.1572247	0.7031	.6098E-01	2.58	0.0495	0.8944	0.0233

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	432.9436	432.9436		
Model	5	62.40015	12.48003	8.47	0.018
Error	5	7.36951	1.473902		
Total	10	69.76965	6.976965		

Root Mean Square Error	1.214044
Mean of Dependent Variable	6.273636
Coefficient of Variation	.1935151
R Squared	0.8944
Adjusted R Squared	0.7887

----------Multiple Regression----------

Date/Time 12-30-1996 10:17:47
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC72 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	3.013317	0.0000	.6282194	4.80	0.0049		
LDRYWGT	-.458977	-1.1666	.0809751	-5.67	0.0024	0.0313	0.0313
LBTUCOOL	.7714716	1.3597	.1167781	6.61	0.0012	0.9004	0.2606

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	19.15805	19.15805		
Model	2	1.121885	.5609426	22.61	0.003
Error	5	.1240649	2.481297E-02		
Total	7	1.24595	.1779929		

Root Mean Square Error	.1575213
Mean of Dependent Variable	1.5475
Coefficient of Variation	.1017908
R Squared	0.9004
Adjusted R Squared	0.8606

----------Multiple Regression----------

Date/Time 12-30-1996 10:16:59
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC72 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.9984067	0.0000	.1456264	6.86	0.0010		
SRAVWGT	-.171E-01	-0.9240	.3850E-02	-4.44	0.0068	0.6014	0.6014
SRMAXKVA	.1324E-01	0.4747	.5804E-02	2.28	0.0714	0.8047	0.0344

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.10125	2.10125		
Model	2	.1192116	5.960578E-02	10.30	0.017
Error	5	2.893845E-02	5.78769E-03		
Total	7	.14815	2.116429E-02		

Root Mean Square Error	7.607687E-02
Mean of Dependent Variable	.5125
Coefficient of Variation	.1484427
R Squared	0.8047
Adjusted R Squared	0.7265

----------Multiple Regression----------

Date/Time 12-07-1996 13:39:03
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC91 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	2.44888	0.0000	2.114685	1.16	0.3113		
DRYWGT	-.862E-04	-4.3648	.2765E-04	-3.12	0.0356	0.0007	0.0007
WETAREA	.8878E-03	4.4064	.2941E-03	3.02	0.0392	0.2935	0.0177
SRAVWGT	-.894E-01	-0.8402	.3356E-01	-2.66	0.0562	0.5706	0.0126
LBTUCOOL	1.021416	0.5871	.536636	1.90	0.1297	0.7747	0.1279

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	137.9059	137.9059		
Model	4	14.50421	3.626053	3.44	0.129
Error	4	4.218811	1.054703		
Total	8	18.72302	2.340378		

Root Mean Square Error	1.026987
Mean of Dependent Variable	3.914444
Coefficient of Variation	.2623583
R Squared	0.7747
Adjusted R Squared	0.5493

----------Multiple Regression----------

Date/Time 12-07-1996 13:36:39
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC91 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	4913.421	0.0000	1417.354	3.47	0.0179		
DRYWGT	-.102E-01	-2.2307	.2809E-02	-3.64	0.0149	0.0687	0.0687
WETAREA	.1790624	3.8215	.3551E-01	5.04	0.0040	0.6112	0.1666
LDRYWGT	-540.0382	-1.5232	144.7553	-3.73	0.0136	0.7327	0.1030
SRAVWGT	14.2997	0.5779	3.444866	4.15	0.0089	0.9399	0.6165

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	587277.1	587277.1		
Model	4	951850	237962.5	19.54	0.003
Error	5	60881.94	12176.39		
Total	9	1012732	112525.8		

Root Mean Square Error	110.3467
Mean of Dependent Variable	242.338
Coefficient of Variation	.455342
R Squared	0.9399
Adjusted R Squared	0.8918

----------Multiple Regression----------

Date/Time 12-30-1996 10:26:22
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC91 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.1555593	0.0000	.5235E-01	2.97	0.0411		
AVCSWGT	.1507E-03	0.9016	.3616E-04	4.17	0.0141	0.8129	0.8129

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.7776	.7776		
Model	1	3.495276E-02	3.495276E-02	17.37	0.014
Error	4	8.047235E-03	2.011809E-03		
Total	5	.043	.0086		

Root Mean Square Error	4.485319E-02
Mean of Dependent Variable	.36
Coefficient of Variation	.1245922
R Squared	0.8129
Adjusted R Squared	0.7661

----------Multiple Regression----------

Date/Time 12-30-1996 10:24:46
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC91 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.3448696	0.0000	.6992E-01	4.93	0.0387		
NAVIONIC	-.304E-01	-2.4147	.6407E-02	-4.74	0.0417	0.4318	0.4318
AVCSWGT	.2166E-03	1.3262	.5288E-04	4.10	0.0548	0.5661	0.0477
MAX KVA	.1467E-02	1.8479	.4173E-03	3.52	0.0723	0.9396	0.2570

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.05415	.05415		
Model	3	3.885103E-02	1.295034E-02	10.36	0.089
Error	2	2.498973E-03	1.249486E-03		
Total	5	.04135	.00827		

Root Mean Square Error	3.534808E-02
Mean of Dependent Variable	.095
Coefficient of Variation	.372085
R Squared	0.9396
Adjusted R Squared	0.8489

----------Multiple Regression----------

Date/Time 12-30-1996 10:29:49
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC91 created 12-30-1996

Multiple Regression Report

Dependent Variable: SCH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	.8248034	0.0000	.841635	0.98	0.3994		
AVCSWGT	.9136E-03	6.9133	.7308E-03	1.25	0.2999	0.1582	0.1582
LBTUCOOL	.1250988	1.2252	.5486E-01	2.28	0.1069	0.5639	0.5391
SRAVWGT	-.710E-01	-6.9248	.5533E-01	-1.28	0.2898	0.7183	0.1376

Analysis of Variance Report

Dependent Variable: SCH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	2.172857E-02	2.172857E-02		
Model	3	1.951767E-02	6.505893-03	2.55	0.231
Error	3	7.653761E-03	2.551253E-03		
Total	6	2.717143E-02	4.528571E-03		

Root Mean Square Error	5.050993E-02
Mean of Dependent Variable	5.571429E-02
Coefficient of Variation	.9065886
R Squared	0.7183
Adjusted R Squared	0.4366

----------Multiple Regression----------

Date/Time 12-30-1996 10:28:18
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC91 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-2.156363	0.0000	2.252716	-0.96	0.4091		
LDRYWGT	-.1149997	-0.5260	.8795E-01	-1.31	0.2822	0.0167	0.0167
AVCSWGT	-.348E-02	-8.6591	.1723E-02	-2.02	0.1370	0.1481	0.1210
SRAVWGT	.2582852	8.2950	.1331847	1.94	0.1478	0.6220	0.0878

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	11.08801	11.08801		
Model	3	.1560489	5.201631E-02	1.65	0.346
Error	3	9.483678E-02	3.161226E-02		
Total	6	.2508857	4.181429E-02		

Root Mean Square Error	.1777984
Mean of Dependent Variable	1.258571
Coefficient of Variation	.14127
R Squared	0.6220
Adjusted R Squared	0.2440

----------Multiple Regression----------

Date/Time 12-07-1996 13:42:56
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC96 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: MH/MA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	797.9314	0.0000	72.04364	11.08	0.0016		
DRYWGT	-.113E-02	-5.7946	.1682E-03	-6.72	0.0067	0.3067	0.3067
LDRYWGT	-97.0247	-7.4502	9.525767	-10.19	0.0020	0.8304	0.6523
SRDRYWGT	1.381802	12.2425	.1737885	7.95	0.0041	0.9923	0.4524

Analysis of Variance Report

Dependent Variable: MH/MA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	899.2622	899.2622		
Model	3	1692.968	564.3225	129.13	0.001
Error	3	13.11101	4.370336		
Total	6	1706.079	284.3464		

Root Mean Square Error	2.090535
Mean of Dependent Variable	11.33429
Coefficient of Variation	.1844434
R Squared	0.9923
Adjusted R Squared	0.9846

----------Multiple Regression----------

Date/Time 12-07-1996 13:42:32
Data Base Name C:\NASA\DATA\REGWUC
Description Merge of WUC96 and REG96 created 12-07-1996

Multiple Regression Report

Dependent Variable: FHBMA

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	95683.18	0.0000	51515.67	1.86	0.2044		
DRYWGT	-.1606064	-8.5874	.1187106	-1.35	0.3087	0.2624	0.2624
LDRYWGT	-12003.85	-9.8605	6910.62	-1.74	0.2245	0.7204	0.5863
SRDRYWGT	188.1105	17.2746	126.7165	1.48	0.2760	0.8670	0.4116

Analysis of Variance Report

Dependent Variable: FHBMA

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	1.187072E+07	1.187072E+07		
Model	3	1.094776E+07	3649254	4.35	0.193
Error	2	1679622	839810.9		
Total	5	1.262738E+07	2525477		

Root Mean Square Error	916.412
Mean of Dependent Variable	1406.575
Coefficient of Variation	.6515202
R Squared	0.8670
Adjusted R Squared	0.6675

----------Multiple Regression----------

Date/Time 12-30-1996 10:32:58
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC96 created 12-30-1996

Multiple Regression Report

Dependent Variable: REMRAT

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	1.102519	0.0000	.5736944	1.92	0.3054		
LDRYWGT	-.787E-01	-0.8477	.4925E-01	-1.60	0.3559	0.7187	0.7187

Analysis of Variance Report

Dependent Variable: REMRAT

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.1045333	.1045333		
Model	1	5.941006E-03	5.941006E-03	2.55	0.356
Error	1	2.32566E-03	2.32566E-03		
Total	2	8.266667E-03	4.133334E-03		

Root Mean Square Error	.0482251
Mean of Dependent Variable	.1866667
Coefficient of Variation	.2583488
R Squared	0.7187
Adjusted R Squared	0.4373

----------Multiple Regression----------

Date/Time 12-30-1996 10:32:45
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC96 created 12-30-1996

Multiple Regression Report

Dependent Variable: PCTOFF

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-2.351378	0.0000	1.197531	-1.96	0.2999		
SRAVWGT	.7240E-01	0.9039	.3426E-01	2.11	0.2814	0.8171	0.8171

Analysis of Variance Report

Dependent Variable: PCTOFF

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	.0867	.0867		
Model	1	.1416765	.1416765	4.47	0.281
Error	1	3.172352E-02	3.172352E-02		
Total	2	.1734	.0867		

Root Mean Square Error	.178111
Mean of Dependent Variable	.17
Coefficient of Variation	1.047712
R Squared	0.8171
Adjusted R Squared	0.6341

----------Multiple Regression----------

Date/Time 12-31-1996 17:21:43
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC61 created 12-31-1996

Multiple Regression Report

Dependent Variable: SG MH/FH

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	2.995078	0.0000	.763287	3.92	0.0172		
DRYWGT	-.583E-04	-4.0697	.1439E-04	-4.05	0.0154	0.4104	0.4104
LEN+WING	-.261E-01	-2.1986	.7007E-02	-3.72	0.0204	0.4123	0.3598
WETAREA	.9778E-03	6.8769	.1803E-03	5.42	0.0056	0.9296	0.4985

Analysis of Variance Report

Dependent Variable: SG MH/FH

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	15.44846	15.44846		
Model	3	16.69294	5.564312	17.61	0.009
Error	4	1.26368	.31592		
Total	7	17.95662	2.565231		

Root Mean Square Error	.5620676
Mean of Dependent Variable	1.389625
Coefficient of Variation	.4044743
R Squared	0.9296
Adjusted R Squared	0.8768

----------Multiple Regression----------

Date/Time 12-30-1996 10:33:18
Data Base Name C:\nasa\DATA2\WORKING
Description Merge of REG96 and WUC96 created 12-30-1996

Multiple Regression Report

Dependent Variable: CREWSIZE

Independent Variable	Parameter Estimate	Stndized Estimate	Standard Error	t-value (b=0)	Prob. Level	Seq. R-Sqr	Simple R-Sqr
Intercept	-4.572151	0.0000	3.412051	-1.34	0.4081		
SRAVWGT	.1840134	0.8834	.9761E-01	1.89	0.3105	0.7804	0.7804

Analysis of Variance Report

Dependent Variable: CREWSIZE

Source	df	Sums of Squares (Sequential)	Mean Square	F-Ratio	Prob. Level
Constant	1	10.12003	10.12003		
Model	1	.9153302	.9153302	3.55	0.310
Error	1	.2575364	.2575364		
Total	2	1.172867	.5864334		

Root Mean Square Error	.5074805
Mean of Dependent Variable	1.836667
Coefficient of Variation	.2763052
R Squared	0.7804
Adjusted R Squared	0.5608

WUC Summary

17-Nov-96 **Import File Date:** 11/17/96

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC11	A010	9.57678464307		3.61460707858	0.08349445279	0.1799640072	5.09538092382	1.22115104006	0.15416916617	
	B001	1.49133258679		4.40941769317	0.00512239658	0.04759238522	0.32441209406	1.27809208498	0.11254199328	
	B002	0.45532028947		4.68552666845	0	0.03377110694	0.09541677834	1.23303333380	0.27472527473	
	B052	1.64982711781		3.38500864411	0.04903362785	0.12571005186	0.24252901951	1.25370690523	0.11867127686	
	C005	1.27293049249		4.29491209687	0.14717937597	0.13792835798	0.33007334963	1.2820633125	0.1423914309	
	C009	7.69245982695		4.54276885043	0.00802699246	0.11557478368	5.22805933251	1.11342373785	0.20210135970	
	C010	36.0710990502		4.06811397558	0.07274364619	0.32157394844	7.41248303935	1.14272864482	0.37584803256	
	C130	3.22494049137		5.43220054408	0.01032058808	0.10482019893	1.36096233954	1.1412186017	0.18836606308	
	C135	4.46691628886		3.84325210492	0.03801621382	0.07852979275	1.15948834197	1.14723943431	0.16147182642	
	C141	2.68192792728		5.04636582474	0.09910113879	0.20799051486	0.83203391657	1.23082093286	0.28150037725	
	E003	3.41692105695		2.54057114722	0.25762773180	0.10520269161	0.48219268012	1.24537801334	0.07976366322	
	E004	3.19022222222		2.99466666667	0.07776788364	0.22222222222	0.84	1.28526466381	0.28444444444	
	F004	6.12097026604		3.98982785603	0.04255736419	0.09389671362	4.8951486698	1.05830977613	0.16588419405	
	F015	4.28463565253		5.04235487855	0.04085605019	0.0711815562	2.77867435159	1.18087936266	0.10456978180	
	F016	9.67676521576		5.561926627	0.04438278063	0.12528697934	6.74520920208	1.29951556706	0.15480485405	
	F111	4.80272425249		5.60657807309	0.36529231207	0.14219269103	2.03720930233	1.19035627879	0.11162790698	
	F117	32.5100961538		6.82692307692	0	0.8125	18.8798076923	1.68150814703	0.51442307692	
	T001	25.8774193548		4.05107526882	0.03548772395	0.25161290323	11.8268817204	1.69501057273	0.17204301075	
	T038	5.22388999846		4.42429712705	0.16844006910	0.38477492702	4.57051774466	2.24583610510	0.20855738209	
	T043	26.3021276596		3.98014184397	0.00890947969	0.13475177305	8.99290780142	1.24769336802	0.21985815603	
	U002	3.02701525054		4.88598402324	0.05722354340	0.12273057371	1.15032679739	1.51268855209	0.10748002905	
	AVG	**9.191**		**4.439**	**0.078**	**0.182**	**4.061**	**1.318**	**0.197**	
	WT AVG	**0.136**		**4.397**	**0.090**	**0.107**	**1.201**	**1.275**	**0.193**	
WC12	A010	33.4160125589		5.1242281528	0.13286834688	0.3286237572	17.7791732077	1.42339670911	0.28571428571	
	B001	35.0463157895		2.89815789474	0.01707073459	0.06578947368	7.62368421053	0.96928357684	0.08157894737	
	B002	30.3357142857		3.31607142857	0	0.14285714286	6.35714285714	1.32114399545	0.03571428571	
	B052	11.0415702479		3.23611570248	0.02676405240	0.40082644628	1.62314049587	1.36544966349	0.30909090909	
	C005	1.22167759237		2.70722213945	0.26956324338	0.55721096544	0.31678337306	0.69954060451	0.56629916567	
	C009	13.6175054705		3.39234135667	0.06389085983	0.15426695842	9.25492341357	1.11590176206	0.21772428884	
	C010	24.9150890347		2.96213683224	0.25713472126	0.55482661668	5.11996251172	1.194410013	0.57731958763	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC12	C130	8.48847057507		4.16188744686	0.03007746186	0.16569702394	3.58223316178	0.98857184011	0.22421123294	
	C135	19.8187320402		4.12785560345	0.11381010185	0.19773706897	5.14439655172	1.17602723745	0.27568247126	
	C141	8.97512324155		7.92075267524	0.42346710304	0.32247204521	2.78441745822	1.65706122913	0.33617891066	
	E003	23.9302298851		13.7279310345	0.11283313657	0.19310344828	3.37701149425	1.58704405023	0.27931034483	
	E004	17.0904761905		3.66190476190	0.00650195059	0.2380952381	4.5	1.35626102293	0.21428571429	
	F004	7.4643129771		4.44179389313	0.06083780881	0.89122137405	5.96946564885	1.87417463845	0.13358778626	
	F015	20.6168383518		6.86030110935	0.11095036788	0.45820126783	13.3704437401	1.62952520412	0.19750396197	
	F016	19.881709665		6.4346361186	0.11522373323	0.32633808240	13.858586831	1.60865902965	0.17520215633	
	F111									
	F117	41.2323170732		7.8506097561	0	0.78658536585	23.9451219512	1.5732684882	0.34756097561	
	T001	64.176		2.66853333333	0	0.33866666667	29.3306666667	1.30810457516	0.376	
	T038	20.2635876043		2.97112634088	0.11519290750	0.65345649583	17.7291418355	1.76852758386	0.16805721097	
	T043	30.3983606557		4.01557377049	0	0.17213114754	10.393442623	1.15722587046	0.16393442623	
	U002	17.9663793103		7.07974137931	0.12608828006	0.17241379310	6.8275862069	1.32331614567	0.18103448276	
	AVG	**22.495**		**4.978**	**0.099**	**0.356**	**9.444**	**1.355**	**0.257**	
	WT AVG	**0.525**		**4.068**	**0.187**	**0.451**	**4.424**	**1.110**	**0.378**	
WC13	A010	16.1216864428		7.69333501641	0.49143676596	0.50946730624	8.57763191113	2.30339371749	0.40621055289	
	B001	7.33752066116		10.8695867769	0.49497422484	0.32286501377	1.59614325069	1.77898310587	0.30578512397	
	B002	6.50881226054		5.81302681992	0.20926707092	0.17241379310	1.36398467433	1.43178000491	0.41379310345	
	B052	4.90286238532		6.10488073394	0.24168960916	0.24146788991	0.72073394495	1.53775333349	0.29064220183	
	C005	1.58001830531		3.64558023026	0.18258396015	0.25612987138	0.40970181608	1.30199293938	0.32487114023	
	C009	11.7418867925		4.135	0.05879400424	0.52358490566	7.98018867925	1.19855072464	0.45	
	C010	21.1322734499		4.16287758347	0.00695067693	0.69634340223	4.3426073132	1.03297210508	0.69236883943	
	C130	8.89396283922		7.90749076842	0.32037281233	0.30684016177	3.75335560635	1.62371473684	0.31065002051	
	C135	6.02844577984		7.26099426386	0.45268278002	0.29418191751	1.56481835564	1.87139027419	0.31231903851	
	C141	9.48007366015		5.97683515367	0.34466316487	0.39662179324	2.94107188214	1.7894716029	0.45427990856	
	E003	13.9726845638		5.68651006711	0.39662925327	0.3389261745	1.97181208054	1.43237029398	0.28791946309	
	E004	3.24796380090		7.14162895928	0.56136349237	0.29864253394	0.85520361991	1.66471537512	0.20361990950	
	F004	6.50798668885		7.18519134775	0.38730518954	0.73044925125	5.20465890183	2.21765165054	0.50582362729	
	F015	11.0364581124		9.51908801697	0.52239737091	0.52735949099	7.15737009544	2.19333825276	0.49194061506	
	F016	9.23581075038		7.56080851444	0.4534413171	0.5975315267	6.43784098023	1.85313934178	0.57718450944	
	F111	17.7159313725		22.7950980392	0.73088254269	0.55147058824	7.51470588235	4.82946992356	0.50735294118	
	F117	24.4119133574		7.81552346570	0.00023095755	0.8844765343	14.1768953069	1.19869991805	0.40794223827	
	T001	18.8309859155		5.878951 4867	0.25931348409	0.57198748044	8.60641627543	2.45981233753	0.48982785603	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC13	T038	8.25398713436		4.85112270907	0.54705717517	0.75895132904	7.22162883845	2.80411717287	0.59983007647	
	T043	22.4763636364		9.24	0.58572740391	0.52121212121	7.68484848485	2.76646706587	0.50303030303	
	U002	4.59052863436		7.96861233480	0.46434938843	0.38986784141	1.74449339207	2.37869024919	0.37555066079	
	AVG	**11.143**		**7.582**	**0.367**	**0.471**	**4.849**	**1.984**	**0.424**	
	WT AVG	**0.337**		**6.638**	**0.365**	**0.389**	**2.979**	**1.805**	**0.376**	
WC14	A010	13.5694857629		5.47392690183	0.15805328354	0.40331491713	7.21971950701	1.49153321576	0.31512962176	
	B001	3.93429837518		10.1329689808	0.18485660392	0.16277695716	0.85583456425	1.61610350571	0.22274741507	
	B002	9.18270270270		5.69783783784	0	0.13513513514	1.92432432432	1.18952773233	0.25945945946	
	B052	4.98890963406		4.76131441374	0.23644006651	0.27632561613	0.73338312173	1.32258733715	0.33980582524	
	C005	3.11457601367		5.28305953851	0.11986864596	0.22704396544	0.80761561105	1.34771927003	0.27404804862	
	C009	15.2716564417		5.00073619632	0.00981450584	0.16319018405	10.3791411043	1.08241043210	0.24785276074	
	C010	65.6404938272		4.82419753086	0.00870099294	0.34567901235	13.4888888889	1.06966685828	0.48888888889	
	C130	14.5275155577		6.03236955481	0.03913782514	0.20449976065	6.13078027764	1.20647391096	0.27467687889	
	C135	8.15419345304		5.47422596616	0.13714942895	0.17416685140	2.11660385724	1.28202013259	0.25131160866	
	C141	5.18339698632		5.52967849455	0.09231109253	0.33518505659	1.60808277203	1.21264879266	0.42663703909	
	E003	5.45865233351		2.66463030939	0.10296273701	0.08442579969	0.77031987415	1.09206160221	0.11221814368	
	E004	5.7424		6.0824	0.04471918979	0.24	1.512	1.38551252847	0.304	
	F004	6.83793706294		6.82692307692	0.17664532650	0.38811188811	5.46853146853	1.32819515115	0.47377622378	
	F015	12.8217075274		7.36281877541	0.13202429556	0.27904398177	8.31514106197	1.55006711061	0.36023161266	
	F016	16.5000559239		7.49432771431	0.19822826776	0.30063114165	11.5013980986	1.56457781092	0.27123112567	
	F111	16.0982182628		18.8454342984	0.32217311147	0.50556792873	6.82850779510	1.95898485431	0.49443207127	
	F117	79.5541176471		15.5870588235	0	0.82352941176	46.2	1.37694865932	0.61176470588	
	T001	40.8590831919		6.19303904924	0.00128848315	0.28522920204	18.6740237691	1.30379769458	0.55517826825	
	T038	20.0544382188		5.38829253907	0.27248696071	0.48982601003	17.5461515777	2.28317480469	0.36832792687	
	T043	34.3388888889		5.81111111111	0	0.30555555556	11.7407407407	1.1394335512	0.38888888889	
	U002	3.03804664723		4.95954810496	0.05340583437	0.20918367347	1.15451895044	1.18366303221	0.18002915452	
	AVG	**18.327**		**6.925**	**0.109**	**0.302**	**8.332**	**1.380**	**0.344**	
	WT AVG	**0.389**		**6.206**	**0.127**	**0.247**	**3.440**	**1.348**	**0.291**	
WC23	A010	19.3157894737		6.91935874168	0.04633361602	0.38203266788	10.2770719903	1.29819113352	0.30338777979	
	B001	3.13724381625		4.20115429918	0.09864359450	0.32579505300	0.68244994111	1.27307706036	0.22614840989	
	B002	2.49823529412		9.86720588235	0.04380225643	0.18823529412	0.52352941176	1.37617934203	0.18970588235	
	B052	2.82937314697		6.16624311732	0.00543325205	0.25476493011	0.41592545532	1.25330144661	0.28208386277	
	C005	1.2997146933		4.02530908226	0.15185558171	0.17879220162	0.33701854494	1.21979063099	0.21742748455	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC23	C009	16.2698039216		4.6137254902	0	0.24836601307	11.0575163399	1.10906862745	0.25490196078	
	C010	19.4188458729		5.48758217677	0.00995673877	0.30168005844	3.99050401753	1.10636737435	0.33820306793	
	C130									
	C135	11.1974327752		5.78360223237	0.01254794078	0.14084221208	2.90654490107	1.10585128726	0.17006595637	
	C141	2.60663128121		3.9929706324	0.12183735954	0.29468868946	0.80867409296	1.18838411679	0.33372909173	
	E003	7.83269375470		3.87666817156	0.01915708812	0.23965387509	1.10534236268	1.10819090616	0.27351392024	
	E004	2.59133574007		3.93790613718	0.0032086542	0.19133574007	0.68231046931	1.15143454304	0.20577617329	
	F004	11.4032069971		8.24052478134	0.04595789846	0.58309037901	9.1195335277	1.62535005549	0.51311953353	
	F015	8.54114074682		8.70587607714	0.03222345922	0.37734919984	5.53910545753	1.42020816919	0.25514977431	
	F016	30.7292367207		9.77933343252	0.03251636697	0.32896890344	21.4198779943	1.44664695747	0.20309477756	
	F111	11.8493442623		11.3368852459	0.33051840069	0.41147540984	5.0262295082	1.68203045191	0.37540983607	
	F117	30.7368181818		8.77409090909	0.00481790395	0.94090909091	17.85	1.40836130162	0.74545454545	
	T001	46.6395348837		6.26627906977	0	0.47480620155	21.3158914729	1.77013533044	0.44573643411	
	T038	17.0523069208		4.39729187563	0.14942633608	0.43029087262	14.9195085256	1.72442818652	0.36108324975	
	T043	33.7145454545		5.38272727273	0	0.23636363636	11.5272727273	1.17270746683	0.31818181818	
	U002	34.735		11.5725	0.09850939728	0.49166666667	13.2	2.15102230483	0.21666666667	
	AVG	**15.720**		**6.666**	**0.060**	**0.351**	**7.635**	**1.380**	**0.311**	
	WT AVG	**0.287**		**5.663**	**0.080**	**0.263**	**2.418**	**1.277**	**0.260**	
WC24	A010	116.316939891		4.74007285974	0.05168504784	0.49180327869	61.8870673953	1.32035455703	0.41347905282	
	B001	17.2284605433		7.80582147477	0.03636122574	0.25355756792	3.74773609314	1.49823828690	0.22768434670	
	B002	9.33406593407		3.65	0.01956947162	0.09340659341	1.95604395604	1.12654320988	0.10989010989	
	B052									
	C005	15.341253508		4.42913938260	0.13980674798	0.34565014032	3.97801683817	1.24764489651	0.40037418148	
	C009	74.0857142857		5.15535714286	0	0.38095238095	50.3511904762	1.14818644607	0.39880952381	
	C010	106.764658635		6.64618473896	0.01843011662	0.42971887550	21.9397590361	1.12077314316	0.50200803213	
	C130	49.1226610554		6.20323729362	0.07545220178	0.26804791195	20.7303334412	1.37849717636	0.29426999029	
	C135	46.0562186978		6.68589315526	0.17191655118	0.34474123539	11.9549248748	1.47266369059	0.24123539232	
	C141	45.6551070336		4.15993883792	0.13216202308	0.37737003058	14.1639143731	1.24923088226	0.45198776758	
	E003	52.04825		5.17075	0.29923125272	0.265	7.345	1.26115853659	0.255	
	E004	31.2086956522		5.65217391304	0	0.4347826087	8.21739130435	1.13043478261	0.52173913043	
	F004									
	F015	20.2085048544		11.4311262136	0.45315889336	0.44368932039	13.105631068	1.96411103326	0.26466019417	
	F016	23.9068410696		5.19978006714	0.05258131516	0.35397615465	16.6643129992	1.33327694029	0.18231276768	
	F111									

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC24	F117	55.8851239669		6.15371900826	0.00402900886	0.90082644628	32.4545454545	1.40495867769	0.74380165289	
	T001									
	T038									
	T043	74.172		4.696	0	0.28	25.36	1.17989949749	0.36	
	U002	75.7854545455		9.70545454545	0.04870738104	0.27272727273	28.8	1.19968535791	0.07272727273	
	AVG	**50.820**		**6.093**	**0.094**	**0.371**	**20.166**	**1.316**	**0.340**	
	WT AVG	**1.950**		**5.913**	**0.117**	**0.314**	**11.986**	**1.334**	**0.287**	
WC41	A010	53.8886075949		4.85476793249	0.05772740705	0.37299578059	28.6717299578	1.34481106163	0.31139240506	
	B001	5.25349112426		6.63577909270	0.03119779808	0.19132149901	1.14280078895	1.27611136398	0.20710059172	
	B002	5.34213836478		7.19654088050	0.01009394800	0.16981132075	1.11949685535	1.29201811140	0.17924528302	
	B052	20.87546875		6.9315625	0.00067625445	0.321875	3.06875	1.43510610766	0.2625	
	C005	5.50144246897		5.19095940959	0.33518587331	0.32237504193	1.42653471989	1.50462591582	0.33277423683	
	C009	28.6783410138		4.68917050691	0.00098275269	0.42396313364	19.4907834101	1.17818354445	0.42857142857	
	C010	55.0401656315		5.85279503106	0	0.55693581781	11.3105590062	1.0878801173	0.6314699793	
	C130	16.8862563988		5.87683062542	0.0283227165	0.29979968840	7.12619630536	1.3206360956	0.30258179390	
	C135	35.5053732304		7.43741956242	0.03427570245	0.28603603604	9.21621621622	1.30710361378	0.2824967825	
	C141	13.7393889196		5.23140069943	0.17827261788	0.37677158108	4.26247009019	1.4062905106	0.40548499908	
	E003	12.6484204131		4.08207776428	0.05406974148	0.36998784933	1.78493317132	1.21490409651	0.38578371810	
	E004	5.05492957746		5.65774647887	0.00373412995	0.38028169014	1.33098591549	1.20377584657	0.38028169014	
	F004	66.293220339		6.27457627119	0.05915721232	0.49152542373	53.0169491525	1.59253204852	0.35593220339	
	F015	14.7079988694		5.50093273036	0.05987730124	0.28109101187	9.5384397965	1.33194497103	0.26286037309	
	F016	50.6700686948		5.53623650638	0.05890355717	0.28385672228	35.3196761531	1.38405912659	0.22865554465	
	F111	26.5738970588		13.2161764706	0.57143651942	0.44852941176	11.2720588235	2.91747824958	0.38970588235	
	F117	47.6204225352		10.9274647887	0	0.92253521127	27.6549295775	1.43029643832	0.61267605634	
	T001	48.4225352113		6.36659959759	0.00271790658	0.39637826962	22.1307847082	1.27843365413	0.42655935614	
	T038	53.5047993706		4.65594020456	0.30025178701	0.52321007081	46.8127458694	1.81164988504	0.42722265932	
	T043	63.9413793103		3.7775862069	0	0.39655172414	21.8620689655	1.17316341829	0.27586206897	
	U002	9.76159250585		7.06978922717	0.04829733669	0.35362997658	3.70960187354	1.29246603787	0.16861826698	
	AVG	**30.472**		**6.332**	**0.087**	**0.389**	**15.299**	**1.418**	**0.346**	
	WT AVG	**0.697**		**6.226**	**0.093**	**0.321**	**6.169**	**1.364**	**0.302**	
WC42	A010	42.8577181208		9.33724832215	0.51115184187	0.69463087248	22.8026845638	2.19184232914	0.34093959732	
	B001	3.51666226565		5.94203855294	0.3520631041	0.19461315025	0.76498547663	1.38509057178	0.17005545287	
	B002	5.27577639752		7.40155279503	0.32450803508	0.28571428571	1.10559006211	1.54520935178	0.12422360248	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC42	B052	10.6626496409		9.46145251397	0.28873405763	0.32482043097	1.56743814844	2.02600696231	0.29529130088	
	C005	10.0029277219		6.47627325404	0.4792118931 8	0.34431229033	2.59377859103	1.51314795655	0.34034766697	
	C009	72.3627906977		5.24767441860	0.15643695989	0.45930232558	49.1802325581	1.23765906099	0.38372093023	
	C010	83.07625		4.9803125	0.01091798958	0.453125	17.071875	1.12932256236	0.5375	
	C130	21.0370026341		4.69248578955	0.07789487368	0.2520449189	8.87785942049	1.30346827487	0.2466380147	
	C135	35.3574815764		7.22380647228	0.33866625269	0.36975328420	9.17782761935	1.69175795604	0.27234860622	
	C141	33.3688421994		5.61032632991	0.33643817279	0.37013857845	10.3522574877	1.46483716186	0.41126508717	
	E003	17.1776402640		4.7849009901	0.33521287052	0.35643564356	2.42409240924	1.26920450666	0.32755775578	
	E004	7.25050505051		6.00404040404	0	0.34343434343	1.90909090909	1.16132309556	0.33333333333	
	F004	18.9868932039		6.43106796117	0.24743357488	0.5145631068	15.1844660194	1.81668586474	0.32038834951	
	F015	22.0122250423		8.22567681895	0.2944203029	0.35807952623	14.2753807107	1.66511676497	0.27411167513	
	F016	23.4694545455		9.44602272727	0.53963308271	0.58886363636	16.3594318182	2.27067854021	0.30431818182	
	F111	5.85271255061		5.59748987854	0.51056720045	0.12226720648	2.48259109312	1.58569118372	0.09797570850	
	F117	76.8420454545		8.84659090909	0	0.81818181818	44.625	1.24951848998	0.61363636364	
	T001	85.038869258		5.98798586572	0.08503481648	0.63250883392	38.8657243816	1.72564434171	0.55477031802	
	T038	55.3783387622		9.71099348534	0.59925702929	1.08306188925	48.4519543974	3.50577382142	0.38843648208	
	T043	97.5947368421		3.51052631579	0	0.65789473684	33.3684210526	1.15858954316	0.44736842105	
	U002	5.67102040816		17.3955102041	0.79624111312	0.63401360544	2.15510204082	1.86447054706	0.60272108844	
	AVG	**34.895**		**7.263**	**0.299**	**0.469**	**16.362**	**1.655**	**0.362**	
	WT AVG	**0.641**		**7.832**	**0.417**	**0.362**	**5.675**	**1.588**	**0.283**	
WC44	A010	52.1715686275		2.49501633987	0.12993221782	0.31781045752	27.7581699346	1.08952678597	0.35620915033	
	B001	19.3851528384		4.38296943231	0.19647304972	0.26200873362	4.21688500728	1.33220955389	0.28093158661	
	B002	28.3133333333		3.79833333333	0.00438788943	0.1	5.93333333333	1.18328141225	0.35	
	B052	19.0317663818		3.10028490028	0.01088954236	0.26923076923	2.79772079772	1.14825366677	0.30769230769	
	C005	3.05795263845		2.32806265150	0.19133547984	0.48853253776	0.79293305985	0.95805047387	0.49188886817	
	C009	15.4039603960		2.16274752475	0.00400572246	0.53836633663	10.4690594059	1.03978246382	0.55074257426	
	C010	23.6937611408		3.24563279857	0.02334138840	0.62745098039	4.86898395722	1.06764236795	0.68270944742	
	C130	19.0628015075		3.26594221106	0.09321496025	0.31218592965	8.04472361809	1.18331239531	0.30866834171	
	C135	29.1009229958		3.04699367089	0.04792196777	0.25817510549	7.55379746835	1.11204148572	0.29825949367	
	C141	15.8249099004		3.47220691117	0.27386680018	0.49077803689	4.90947636209	1.23566082248	0.51918592326	
	E003	29.2817158931		3.32784810127	0.46118084612	0.31364275668	4.13220815752	1.18008797917	0.36427566807	
	E004	17.945		4.925	0	0.575	4.725	1.02604166667	0.6	
	F004	42.9813186813		3.06483516484	0.00717102904	0.26373626374	34.3736263736	1.09850722754	0.34065934066	
	F015	26.7129876797		4.32920944559	0.18970628342	0.29799794661	17.3239219713	1.29230132704	0.31442505133	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC44	F016	51.6069965017		4.85384807596	0.10061724264	0.35657171414	35.9727636182	1.34455625373	0.33733133433	
	F111	33.0050228311		10.3776255708	0.80072160866	0.49771689498	14	2.01507292636	0.48858447489	
	F117	54.0968		6.3944	0	0.904	31.416	1.07288590604	0.792	
	T001	38.1394611727		2.10507131537	0	0.47385103011	17.4310618067	1.05782478159	0.41045958796	
	T038	49.7837481698		3.33477306003	0.46853116150	0.52122986823	43.5571010249	1.71014003078	0.48096632504	
	T043	25.5765517241		2.62965517241	0.02779963284	0.4	8.74482758621	1.09568965517	0.4275862069	
	U002	32.8204724409		3.43070866142	0.06564149644	0.6062992126	12.4724409449	1.34012057087	0.59842519685	
	AVG	**29.857**		**3.813**	**0.147**	**0.423**	**14.357**	**1.218**	**0.443**	
	WT AVG	**0.928**		**3.326**	**0.167**	**0.437**	**8.215**	**1.132**	**0.456**	
WC45	A010	69.4108695652		4.69989130435	0.29052475774	0.33804347826	36.9304347826	1.29831251501	0.32608695652	
	B001	8.46636999364		7.36452638271	0.11597493180	0.18436109345	1.84170375079	1.38171226692	0.19898283535	
	B002	9.33406593407		5.98516483516	0.00550812448	0.1043956044	1.95604395604	1.22646820393	0.15934065934	
	B052	5.47777777778		4.66404264043	0.11520271458	0.24272242722	0.80524805248	1.21776570246	0.25379253793	
	C005	3.56323737099		2.95934818034	0.09009647294	0.29701249321	0.92395437262	1.08005408041	0.30635524172	
	C009	117.418867925		4.27264150943	0	0.27358490566	79.8018867925	1.16104388843	0.33962264151	
	C010	69.4109660574		5.69373368146	0	0.45169712794	14.2637075718	1.0543951262	0.54308093995	
	C130	15.2272854992		4.28843953838	0.06156647003	0.22308078274	6.42609131962	1.17170479191	0.26833918716	
	C135	23.4788723404		4.99029787234	0.14627532574	0.28	6.09446808511	1.25070122114	0.33191489362	
	C141	16.7781748708		3.71730726006	0.06983789144	0.39559451562	5.20521465498	1.29522901047	0.35468644639	
	E003	18.1986888112		3.46118881119	0.28139205980	0.21066433566	2.56818181818	1.24503194647	0.22115384615	
	E004	23.9266666667		5.66	0	0.16666666667	6.3	1.43291139241	0.23333333333	
	F004	26.2503355705		11.3859060403	0.13327438845	0.64429530201	20.9932885906	2.36222117018	0.40268456376	
	F015	18.1597975920		7.91423835282	0.25298248322	0.31669865643	11.7770022684	1.6661554427	0.34060373408	
	F016	59.1441008018		6.67777777778	0.1301181879	0.33505154639	41.2265177549	1.36559872756	0.28436426117	
	F111	31.4265217391		12.7486956522	0.54491508083	0.58695652174	13.3304347826	2.42370639775	0.59130434783	
	F117	61.4736363636		7.75909090909	0.00023432923	0.96363636364	35.7	1.2636955878	0.80909090909	
	T001	633.315789474		12.9315789474	0.00040700041	0.34210526316	289.447368421	2.97277676951	0.28947368421	
	T038	106.590282132		4.14028213166	0.14760552716	0.48432601881	93.2586206897	2.09105158165	0.35423197492	
	T043	285.276923077		5.26923076923	0	0.15384615385	97.5384615385	1.2311286844	0.15384615385	
	U002	14.2746575342		5.19623287671	0.12555196731	0.22945205479	5.42465753425	0.96584254214	0.09589041096	
	AVG	**76.981**		**6.275**	**0.120**	**0.344**	**36.763**	**1.484**	**0.327**	
	WT AVG	**0.811**		**5.253**	**0.123**	**0.281**	**7.178**	**1.296**	**0.280**	
WC46	A010	39.9862241703		12.5447714465	0.06905760208	0.30932999374	21.2748904195	1.62707800862	0.24608641202	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC46	B001	5.22668759812		7.83163265306	0.04253570534	0.12362637363	1.13697017268	1.39850583090	0.12441130298	
	B002	7.19830508475		7.26186440678	0.02118100128	0.13135593220	1.50847457627	1.25855535646	0.17372881356	
	B052	6.50452775073		6.07468354430	0.05312805552	0.28919182084	0.95618305745	1.26555907173	0.15871470302	
	C005	8.28900682335		8.62226434167	0.05571203724	0.19914076320	2.14935557240	1.28690512562	0.22188526662	
	C009	38.895		5.2934375	0	0.175	26.434375	1.03996807466	0.203125	
	C010	13.7529229177		7.48385928608	0.00557848240	0.25245732023	2.82617692706	1.14959436038	0.289187791	
	C130	11.8565322707		10.2177684013	0.01815901565	0.21690889201	5.00359431161	1.45345211967	0.26566651039	
	C135	7.56500308494		9.20878864743	0.06547600437	0.15806596696	1.96366627819	1.39105568692	0.20943305683	
	C141	9.60201955235		6.75048880885	0.01929940566	0.20246977103	2.97890403910	1.15788830340	0.24324671984	
	E003	27.3938157895		8.5875	0.07523174749	0.13157894737	3.86578947368	1.43125	0.13815789474	
	E004	16.6930232558		5.17209302326	0	0.34883720930	4.39534883721	1.04698239337	0.32558139535	
	F004	23.5620481928		11.7198795181	0.08691852994	0.36144578313	18.843373494	1.94682384021	0.19277108434	
	F015	14.6314916350		12.6805004921	0.05627497328	0.23323492197	9.48882328132	1.65325951657	0.19935329678	
	F016	17.0574165841		9.91285926660	0.13654999921	0.25743310208	11.8899074992	1.59884826881	0.17253055831	
	F111	18.5812339332		13.0688946015	0.10000393407	0.33676092545	7.88174807198	1.67765014140	0.36246786632	
	F117	41.7413580247		9.75432098765	0.00885963802	0.96296296296	24.2407407407	1.22850390273	0.90740740741	
	T001	47.8449304175		8.44115308151	0	0.29821073559	21.8667992048	1.76224490219	0.24652087475	
	T038	42.9321969697		5.41029040404	0.27448394964	0.34532828283	37.5625	2.08088092463	0.26893939394	
	T043	27.676119403		9.23805970149	0	0.18656716418	9.46268656716	2.38709553010	0.16417910448	
	U002	6.82193126023		7.53878887070	0.0123094959	0.22258592471	2.59247135843	1.25437418814	0.12274959083	
	AVG	**20.658**		**8.705**	**0.052**	**0.273**	**10.396**	**1.481**	**0.249**	
	WT AVG	**0.618**		**8.340**	**0.049**	**0.227**	**5.466**	**1.389**	**0.210**	
WC47	A010	162.488549618		5.17786259542	0.25323111701	0.56997455471	86.4529262087	1.74338807927	0.37659033079	
	B001	54.8049382716		4.55144032922	0.00443037975	0.22633744856	11.9218106996	1.14357797217	0.21399176955	
	B002	23.2712328767		6.01643835616	0.07536429872	0.31506849315	4.87671232877	1.32813208745	0.12328767123	
	B052	36.4040871935		4.68419618529	0.00058169973	0.35967302452	5.35149863760	1.21984275658	0.33514986376	
	C005	15.1779731606		3.45136510875	0.21432210662	0.39565016196	3.93567792689	1.37504586006	0.37667746414	
	C009	78.2792452830		2.02389937107	0.02486016159	0.18238993711	53.2012578616	0.63445121350	0.19496855346	
	C010	77.5055393586		3.04402332362	0.008619864	0.56268221574	15.9271137026	1.09104778624	0.5306122449	
	C130	65.6598442233		3.98312418866	0.03427485062	0.34833405452	27.7092167893	1.27664236816	0.33621808741	
	C135	60.3999452655		3.95955117679	0.06614506297	0.35249042146	15.6781609195	1.15438809819	0.35960591133	
	C141	30.0145154805		3.46879774829	0.11651925953	0.36349014877	9.31162042622	1.26138099938	0.38399678327	
	E003	87.8451476793		2.74852320675	0.0181148296	0.44303797468	12.3966244726	1.03717856859	0.48101265823	
	E004	5.05492957746		1.18450704225	0.00297265161	0.23943661972	1.33098591549	0.38087043159	0.25352112676	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC47	F004	52.8554054054		6.12297297297	0.23946148753	1.18918918919	42.2702702703	2.77057600587	0.44594594595	
	F015	63.6926560588		5.82197062424	0.28622636154	0.52203182375	41.3059975520	1.95368141753	0.27294981640	
	F016	59.0595367458		3.35990849299	0.28204364404	0.73377180440	41.1675722047	1.98811153432	0.25164426651	
	F111	48.5107382550		12.2704697987	0.73970354975	0.73154362416	20.5771812081	2.91460090229	0.58389261745	
	F117	211.315625		4.415625	0.01415428167	1.34375	122.71875	2.8125	0.375	
	T001	179.597014925		3.12313432836	0.03178016726	0.67910447761	82.0820895522	1.20120551091	0.52985074627	
	T038	133.867322835		3.10413385827	0.12207495719	0.42716535433	117.124015748	1.51421163818	0.41732283465	
	T043	206.033333333		5.64444444444	0.02066929134	0.33333333333	70.4444444444	1.5011820331	0.27777777778	
	U002	24.8107142857		6.67738095238	0.05731859511	0.47619047619	9.42857142857	1.25514679556	0.16666666667	
	AVG	**79.840**		**4.516**	**0.124**	**0.514**	**37.867**	**1.503**	**0.347**	
	WT AVG	**1.678**		**3.654**	**0.098**	**0.394**	**14.855**	**1.122**	**0.301**	
WC49	A010	290.263636364		3.81772727273	0.01916894868	0.41818181818	154.436363636	1.20054316752	0.42727272727	
	B001	53.0581673307		6.07011952191	0.03301391441	0.35856573705	11.5418326693	1.42157365853	0.16334661355	
	B002	80.8952380952		7.59523809524	0	0.14285714286	16.9523809524	1.09599395314	0.19047619048	
	B052	71.0654255319		2.79787234043	0.00095057034	0.20744680851	10.4468085106	1.16094287984	0.25531914894	
	C005	8.02927784578		4.63578947368	0.20326130579	0.2482252142	2.08200734394	1.43079922027	0.28274173807	
	C009	97.2375		3.0546875	0	0.3125	66.0859375	0.92847644377	0.3203125	
	C010	134.264646465		4.38787878788	0	0.56565656566	27.5909090909	1.09971899446	0.55555555556	
	C130	43.1815310188		4.12965281730	0.02238209432	0.26607854297	18.2231075697	1.16001483632	0.28884462151	
	C135	122.884966592		4.029844098	0.024593788	0.17483296214	31.8975501114	1.18177246276	0.21380846325	
	C141	27.5752124123		5.44266715922	0.41856203295	0.31991134097	8.55485777614	1.58678342834	0.36017731806	
	E003	131.767721519		3.36392405063	0.1450611477	0.39240506329	18.5949367089	1.47540528537	0.37974683544	
	E004	11.215625		3.8203125	0.00408997955	0.21875	2.953125	1.18643245342	0.25	
	F004	488.9125		7.0875	0.03527336861	0.375	391	1.37621359223	0.375	
	F015	114.366813187		5.05901098901	0.05245780568	0.24285714286	74.1692307692	1.34548164601	0.19890109890	
	F016	378.956330275		4.28532110092	0.0323699422	0.18165137615	264.152293578	1.41429739304	0.19449541284	
	F111	278.003846154		3.76923076923	0.00612244898	0.26923076923	117.923076923	1.07692307692	0.42307692308	
	F117	75.1344444444		10.3266666667	0.00107596299	0.77777777778	43.6333333333	1.22209072978	0.74444444444	
	T001	454.075471698		4.18867924528	0	0.33962264151	207.528301887	1.24663072776	0.33962264151	
	T038	1658.64878049		4.37317073171	0.05633017289	0.48780487805	1451.19512195	1.24237804878	0.43902439024	
	T043	88.3		2.33571428571	0	0.5	30.1904761905	1.21651785714	0.14285714286	
	U002	347.35		9.36666666667	0.01245551601	0.33333333333	132	1.41704488149	0.16666666667	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
	AVG	**235.961**		**4.949**	**0.051**	**0.340**	**146.722**	**1.261**	**0.320**	
	WT AVG	**2.484**		**4.670**	**0.123**	**0.286**	**21.981**	**1.310**	**0.291**	
WC51	A010	23.8276119403		5.49026119403	0.33812245564	0.44029850746	12.6776119403	1.44480557738	0.51268656716	
	B001	380.502857143		6.58857142857	0	0	82.7714285714	1.51461412151	0.05714285714	
	B002	22.6506666667		2.20266666667	0	0.28	4.74666666667	1.15929824561	0.32	
	B052	6.50769605455		4.80579639552	0.01548706202	0.38041889917	0.95664880662	1.17214546232	0.44763760351	
	C005	13.7409300377		5.89618768328	0.42426567762	0.49685798073	3.56304985337	1.84833469695	0.52953498115	
	C009	40.6745098039		3.60098039216	0.03439513567	0.64379084967	27.6437908497	1.13238377112	0.70588235294	
	C010	87.4486842105		3.14671052632	0	0.53618421053	17.9703947368	1.04890350877	0.67105263158	
	C130	28.2201785382		5.15112516273	0.10675654208	0.36693323415	11.9092430723	1.47596709534	0.37400037195	
	C135	11.8899579787		5.54827066049	0.18565838407	0.39456955069	3.08630535503	1.41537516849	0.46352763711	
	C141	18.5410084451		3.64903129657	0.20867197604	0.48931942375	5.75211127670	1.43099266532	0.55563835072	
	E003	29.5728693182		4.59133522727	0.32150481082	0.54971590909	4.17329545455	1.26832464842	0.48579545455	
	E004	18.4051282051		6.57948717949	0.00389711613	0.56410256410	4.84615384615	1.05103629065	0.53846153846	
	F004	26.4277027027		4.56013513514	0.09838494592	0.47972972973	21.1351351351	1.4385284338	0.61486486486	
	F015	22.6395040244		5.50730911464	0.24669887151	0.41157276485	14.6821840331	1.56014422511	0.39351751142	
	F016	74.9115705477		6.82531737396	0.27758882736	0.54189336235	52.2172651433	1.75910241597	0.49764236489	
	F111	37.8434554974		9.61361256545	0.4965690012	0.52879581152	16.0523560209	2.03678232319	0.59685863874	
	F117	50.0896296296		12.4837037037	0.01323206551	0.62962962963	29.0888888889	1.40740740741	0.60740740741	
	T001	58.5547445255		3.12627737226	0	0.36253041363	26.7615571776	1.29185015383	0.41849148418	
	T038	26.0653890379		4.49014948256	0.30146481374	0.72748179379	22.8052893829	2.52255588908	0.50402453047	
	T043	9.53367609254		4.38071979434	0.23725133502	0.63496143959	3.25964010283	1.65310180919	0.62210796915	
	U002	12.4796407186		8.12275449102	0.13590121637	0.41017964072	4.74251497006	1.58030243016	0.39520958084	
	AVG	**47.644**		**5.541**	**0.164**	**0.470**	**17.659**	**1.486**	**0.491**	
	WT AVG	**1.005**		**5.369**	**0.184**	**0.477**	**8.895**	**1.474**	**0.497**	
WC52	A010	202.082278481		4.52689873418	0.07920307585	0.31012658228	107.518987342	1.36352371511	0.38291139241	
	B001	12.9297087379		9.11533980583	0.35416666667	0.22427184466	2.81262135922	1.65733451015	0.24368932039	
	B002	44.7052631579		3.45526315789	0	0.13157894737	9.36842105263	1.10391794182	0.60526315789	
	B052	79.0550295858		5.74852071006	0.01986618631	0.36686390533	11.6213017751	1.21276808229	0.64497041420	
	C005	12.9234042553		6.77691095351	0.38130094536	0.4889676911	3.35106382979	1.79758911234	0.53861308117	
	C009	80.8207792208		3.14155844156	0	0.61038961039	54.9285714286	1.04718614719	0.66233766234	
	C010	76.391954023		3.29022988506	0	0.40517241379	15.6982758621	1.04121198894	0.62643678161	
	C130	32.2988292891		6.1947850149	0.27402579107	0.48169433802	13.6304810558	1.82737021088	0.44338016177	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC52	C135	39.8665823699		5.92485549133	0.17289024390	0.44942196532	10.348265896	1.52309909803	0.52673410405	
	C141	25.5287619699		9.81436388509	0.63568222684	0.50136798906	7.91997264022	1.98269977477	0.55574555404	
	E003	98.6696682464		3.90900473934	0.00909311348	0.36492890995	13.9241706161	1.11367656391	0.44075829384	
	E004	19.9388888889		6.19722222222	0	0.38888888889	5.25	1.11061330147	0.44444444444	
	F004	61.1140625		10.0875	0.25758983891	0.578125	48.875	2.00148809524	0.625	
	F015	37.8725618632		6.42150655022	0.27908966752	0.27147016012	24.5611353712	1.56622110981	0.30203784571	
	F016									
	F111	33.0050228311		13.0849315068	0.61665968733	0.33333333333	14	3.30427563304	0.39269406393	
	F117	143.874468085		8.96595744681	0.00474608448	0.63829787234	83.5531914894	1.17049052830	0.65957446809	
	T001									
	T038	215.20443038		7.37056962025	0.36413206818	0.71518987342	188.287974684	3.09687799170	0.44936708861	
	T043	127.882758621		4.25172413793	0	0.68965517241	43.7241379310	1.06827239647	0.58620689655	
	U002	33.8878048780		13.7292682927	0.3153905371	0.45528455285	12.8780487805	2.90259371938	0.22764227642	
	AVG	**72.529**		**6.948**	**0.198**	**0.442**	**35.382**	**1.678**	**0.493**	
	WT AVG	**2.009**		**7.686**	**0.349**	**0.401**	**15.467**	**1.750**	**0.460**	
WC55	A010									
	B001									
	B002									
	B052									
	C005									
	C009									
	C010									
	C130									
	C135									
	C141									
	E003									
	E004									
	F004									
	F015									
	F016									
	F111									
	F117									
	T001									
	T038									

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC55	T043									
	The data for th									
	U002									
	AVG									
	WT AVG	**#Div/0!**								
WC61	A010									
	B001									
	B002	169.88		7.34	0	0.3	35.6	1.40076335878	0.3	
	B052	212.068253968		4.33968253968	0.02926115582	0.31746031746	31.1746031746	1.12719027005	0.4126984127	
	C005	47.7432314410		6.29461426492	0.28995930071	0.39883551674	12.3799126638	1.743660461 2	0.39446870451	
	C009	732.141176471		3.28823529412	0	0.47058823529	497.588235294	1.236178682	0.70588235294	
	C010	328.202469136		3.81111111111	0	0.37037037037	67.4444444444	1.02449223417	0.66666666667	
	C130	111.985166052		5.68302583026	0.09333160184	0.30332103321	47.2590405904	1.48770309693	0.29372693727	
	C135	153.264861111		7.3525	0.25106728626	0.32777777778	39.7833333333	1.44166666667	0.36944444444	
	C141	71.1592945663		4.85071496663	0.35101407122	0.39656816015	22.0762631077	1.49713424896	0.48808388942	
	E003	36.0819757366		7.30918544194	0.48200312989	0.51473136915	5.09185441941	1.62066196052	0.58405545927	
	E004	31.2086956522		4.18260869565	0.20686070686	0.60869565217	8.21739130435	1.47795360270	0.52173913043	
	F004									
	F015	14867.6857143		7.82857142857	0.14598540146	0.57142857143	9642	1.42857142857	0.28571428571	
	F016	5435.03157895		2.91842105263	0.01623083859	0.15789473684	3788.5	1.29133674895	0.18421052632	
	F111	249.244827586		7.21034482759	0.46676231468	0.31034482759	105.724137931	2.1395681981	0.51724137931	
	F117									
	T001									
	T038									
	T043	618.1		11.25	0.67407407407	0.33333333333	211.333333333	1.99822380107	0.33333333333	
	U002	44.3425531915		6.18404255319	0.14106313435	0.32978723404	16.8510638298	1.68962911289	0.14893617021	
	AVG	**1540.543**		**5.990**	**0.210**	**0.381**	**968.736**	**1.507**	**0.414**	
	WT AVG	**6.508**		**5.876**	**0.277**	**0.435**	**35.071**	**1.569**	**0.428**	
WC62	A010	80.9353612167		4.98377693283	0.25021616398	0.36248415716	43.0621039290	1.53346982549	0.40937896071	
	B001									
	B002									
	B052	199.407462687		4.12089552239	0	0.17910447761	29.3134328358	1.19446247026	0.32835820896	
	C005	107.539672131		5.79049180328	0.49181813034	0.47213114754	27.8852459016	1.88615368185	0.53442622951	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC62	C009	327.536842105		3.19736842105	0	0.60526315789	222.605263158	1.10635585504	0.76315789474	
	C010	648.4		4.18292682927	0.03498542274	0.36585365854	133.243902439	1.02522716404	0.51219512195	
	C130	155.950565262		5.67101747174	0.25188930571	0.29290853032	65.8129496403	1.48068341299	0.40390544707	
	C135	291.162796834		7.30237467018	0.40291227056	0.34300791557	75.5778364116	1.63364086581	0.48812664908	
	C141	75.8598577236		3.50233739837	0.25183530163	0.47154471545	23.5345528455	1.36810054624	0.53252032520	
	E003	206.131683168		4.46534653465	0.3667405765	0.42574257426	29.0891089109	1.26856435644	0.66336633663	
	E004	717.8		0.5	0	1	189	1	1	
	F004									
	F015									
	F016	145.752434721		5.72342978123	0.2941270761	0.28299223712	101.597035992	1.39937158465	0.29498941426	
	F111									
	F117									
	T001	2005.5		1.79166666667	0	0.5	916.583333333	1.0009310987	0.5	
	T038									
	T043	927.15		2.55	0	0	317	1	0	
	U002	32.0630769231		1.45307692308	0.38115404976	0.08461538462	12.1846153846	0.51527550464	0.00769230769	
	AVG	**422.942**		**3.945**	**0.195**	**0.386**	**156.178**	**1.244**	**0.460**	
	WT AVG	**9.984**		**3.699**	**0.333**	**0.300**	**50.874**	**1.152**	**0.335**	
WC63	A010	96.9013657056		4.90819423369	0.24730251971	0.36267071320	51.5569044006	1.46951923164	0.49772382398	
	B001									
	B002	94.3777777778		5.76666666667	0	0.27777777778	19.7777777778	1.27864005913	0.22222222222	
	B052	33.7381313131		4.78308080808	0.0078137374	0.37626262626	4.9595959596	1.35882977502	0.38636363636	
	C005	111.563265306		4.49625850340	0.42151448672	0.39455782313	28.9285714286	1.60009199409	0.48639455782	
	C009	401.496774194		4.13870967742	0.03897116134	0.41935483871	272.870967742	1.09780097544	0.51612903226	
	C010	233.196491228		4.17543859649	0.01869747899	0.38596491228	47.9210526316	1.12242973024	0.65789473684	
	C130	86.3139362912		5.1401592719	0.25001106635	0.29010238908	36.425483504	1.54824074455	0.41638225256	
	C135	100.045965549		5.22937443336	0.30814840499	0.27833182230	25.9691749773	1.31391317421	0.42157751587	
	C141	120.396935484		3.72709677419	0.25346200450	0.36290322581	37.3516129032	1.33587698	0.44677419355	
	E003	28.5979395604		7.58543956044	0.52265401470	0.42445054945	4.03571428571	1.60030370473	0.56730769231	
	E004	7.10693069307		3.49009900990	0.82780141844	0.78217821782	1.87128712871	1.81775990099	0.75247524752	
	F004	38.3460784314		3.83627450980	0.28469205213	0.32352941176	30.6666666667	1.36038103185	0.74509803922	
	F015	18.264970165		4.87750087750	0.32876727116	0.32520182520	11.8452088452	1.42616984722	0.48227448227	
	F016	56.8486650151		6.03077346546	0.3559000995	0.33663638866	39.6264794935	1.48176252222	0.41948802642	
	F111	55.6007692308		5.78	0.40311418685	0.33076923077	23.5846153846	1.74096385542	0.61538461538	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC63	F117	81.4710843373		7.99036144578	0.00150784077	0.56626506024	47.3132530120	1.15634753195	0.59036144578	
	T001	512.042553191		3	0	0.31914893617	234.021276596	1.08695652174	0.51063829787	
	T038	146.561637931		5.72887931034	0.57982845535	0.40732758621	128.230603448	2.23784348060	0.46336206897	
	T043	370.86		10.86	0.74033149171	0.6	126.8	2.39735099338	0.5	
	U002	50.8317073171		10.5158536585	0.39058332367	0.32926829268	19.3170731707	2.06193208991	0.18292682927	
	AVG	**132.228**		**5.603**	**0.299**	**0.395**	**59.654**	**1.525**	**0.494**	
	WT AVG	**2.317**		**5.044**	**0.482**	**0.497**	**19.999**	**1.608**	**0.571**	
WC64	A010	278.855895197		4.41441048035	0.09031556039	0.3056768559	148.366812227	1.21945040894	0.33624454148	
	B001									
	B002	53.0875		3.06875	0	0.09375	11.125	1.24745934959	0.0625	
	B052	20.2122541604		3.52329803328	0.00996178453	0.28139183056	2.97125567322	1.14392793288	0.43419062027	
	C005	20.1843692308		4.53193846154	0.34107327141	0.456	5.23384615385	1.81277538462	0.52492307692	
	C009	95.0106870229		2.92671755725	0.22456964006	0.54961832061	64.572519084	1.16139585605	0.67938931298	
	C010	81.7981538462		3.03630769231	0	0.56307692308	16.8092307692	1.03628248884	0.68615384615	
	C130	36.0170662236		4.43828625682	0.17581624194	0.32898172324	15.1996202231	1.34087198091	0.38950866366	
	C135	42.1025181229		4.73670354826	0.20366656195	0.28767645937	10.9286531858	1.29065491778	0.37771842808	
	C141	33.4136526410		3.29198746643	0.22639816162	0.39212175470	10.3661593554	1.23295410728	0.50626678603	
	E003	22.7284934498		4.92259825328	0.56505732851	0.46069868996	3.20742358079	1.49169644039	0.51637554585	
	E004	21.1117647059		1.82647058824	0.16908212560	0.67647058824	5.55882352941	1.23410174881	0.82352941176	
	F004									
	F015									
	F016	388.947645951		6.33747645951	0.0753892785	0.27683615819	271.116760829	1.48418652448	0.24482109228	
	F111	109.516666667		3.49848484848	0.04980511044	0.27272727273	46.4545454545	1.35076635077	0.63636363636	
	F117	751.344444444		4.11111111111	0	0.22222222222	436.333333333	1.22354497354	0.22222222222	
	T001	198.892561983		2.20826446281	0	0.56198347107	90.9008264463	1.017633393	0.78512396694	
	T038	204.833132530		3.35873493976	0.28203748543	0.24096385542	179.213855422	1.44151714153	0.23493975904	
	T043	42.1431818182		6.76363636364	0.17355510753	0.28409090909	14.4090909091	1.6577540107	0.375	
	U002	104.205		6.7375	0.43005565863	0.425	39.6	1.77302631579	0.225	
	AVG	**139.134**		**4.096**	**0.168**	**0.371**	**76.243**	**1.342**	**0.448**	
	WT AVG	**2.679**		**3.976**	**0.237**	**0.403**	**19.249**	**1.378**	**0.496**	
WC66	A010									
	B001									
	B002									

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC66	B052									
	C005	59.4195652174		5.87192028986	0.43090735199	0.22644927536	15.4076086957	1.64020119828	0.25181159420	
	C009	1131.49090909		5.25454545455	0	0.81818181818	769	1.272287035	0.09090909091	
	C010	4430.73333333		1.9	0	0	910.5	1	0	
	C130	199.657763158		3.46907894737	0.06838611796	0.70131578947	84.2578947368	1.36042311662	0.09210526316	
	C135	1809.02786885		14.0163934426	0.19532163743	0.70491803279	469.573770492	2.60527759157	0.52459016393	
	C141	210.270704225		2.53098591549	0.08425153033	0.32676056338	65.2338028169	1.35346840401	0.15211267606	
	E003	352.869491525		2.7186440678	0.0187032419	0.71186440678	49.7966101695	1.15196782534	0.22033898305	
	E004	358.9		2.75	0	0.5	94.5	1.50273224044	0	
	F004									
	F015									
	F016									
	F111									
	F117									
	T001									
	T038									
	T043	285.276923077		6.36923076923	0.30193236715	0.46153846154	97.5384615385	1.38461538462	0.46153846154	
	U002									
	AVG	**981.961**		**4.987**	**0.122**	**0.496**	**283.979**	**1.476**	**0.199**	
	WT AVG	**26.751**		**4.782**	**0.275**	**0.404**	**77.112**	**1.497**	**0.234**	
WC71	A010	125.211764706		5.02156862745	0.19902381882	0.39215686275	66.6196078431	1.48128868066	0.39215686275	
	B001									
	B002	43.558974359		4.66923076923	0	0.15384615385	9.12820512821	1.15289648623	0.23076923077	
	B052	44.0933993399		4.46402640264	0.01840899009	0.50165016502	6.48184818482	1.29018104123	0.51485148515	
	C005	70.8414686825		6.14449244060	0.45347815389	0.40820734341	18.3693304536	1.92015388769	0.49028077754	
	C009	68.3868131868		3.11098901099	0	0.55494505495	46.4780219780	1.07646678581	0.68681318681	
	C010	49.3217068646		3.04248608534	0.00060979328	0.50092764378	10.1354359926	1.0175538747	0.70686456401	
	C130	28.6301698113		6.17624528302	0.18840902912	0.35584905660	12.0822641509	1.5959290137	0.36849056604	
	C135	113.646446962		7.0254376931	0.31634343346	0.45623069001	29.4994850669	1.62250293143	0.53861997940	
	C141	32.3563502384		3.53463372345	0.26174825861	0.41612483745	10.0381447768	1.33382404659	0.47854356307	
	E003	33.8525203252		6.12097560976	0.49683880565	0.46341463415	4.77723577236	1.67697961911	0.55447154472	
	E004	51.2714285714		2.25714285714	0	0.71428571429	13.5	0.9987357775	0.92857142857	
	F004	13.6282229965		5.47142857143	0.29376552251	0.31358885017	10.8989547038	1.54560129136	0.56445993031	
	F015	21.1962932790		7.31525458248	0.49399881396	0.41059063136	13.7462321792	1.77554722876	0.36435845214	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC71	F016	97.0085486144		5.14189760451	0.26241653041	0.40770314702	67.6200093941	1.63754700781	0.27759511508	
	F111	150.585416667		5.17916666667	0.11464199517	0.375	63.875	1.70929592959	0.60416666667	
	F117	164.929268293		4.8	0	0.26829268293	95.7804878049	1.0480349345	0.46341463415	
	T001	370.246153846		3.45384615385	0	0.53846153846	169.215384615	1.07596453391	0.61538461538	
	T038	131.030057803		5.8098265896	0.56896494544	0.58381502890	114.641618497	2.51507644571	0.50481695568	
	T043	42.6275862069		6.82643678161	0.37228489645	0.66666666667	14.5747126437	1.72384767212	0.65517241379	
	U002	7.08877551020		2.22619047619	0.31497326203	0.11054421769	2.69387755102	1.25066880685	0.04591836735	
	AVG	**82.976**		**4.890**	**0.218**	**0.430**	**39.008**	**1.472**	**0.499**	
	WT AVG	**1.836**		**4.488**	**0.306**	**0.343**	**15.849**	**1.436**	**0.393**	
WC72	A010	734		6.22413793103	0.05595567867	0.40229885057	390.528735632	1.32147302145	0.37931034483	
	B001									
	B002	14.6448275862		7.19137931034	0	0.10344827586	3.06896551724	1.26832086602	0.21551724138	
	B052	55.4369294606		4.77593360996	0.10642919201	0.29875518672	8.14937759336	1.2873136415	0.24481327801	
	C005	19.2373020528		10.1602932551	0.67675904706	0.52903225806	4.98826979472	2.39065723650	0.52023460411	
	C009	109.178947368		3.93157894737	0.20058009817	0.67543859649	74.201754386	1.46700706991	0.5701754386	
	C010	316.480952381		4.53095238095	0	0.44047619048	65.0357142857	1.03683120846	0.65476190476	
	C130	19.9526495726		7.4836817883	0.31388390080	0.39224194609	8.42024983563	1.67046468489	0.40591715976	
	C135	18.6371727749		12.2212633001	0.60963404876	0.51528458031	4.83769633508	2.18236844645	0.44333727411	
	C141	65.7095950704		4.40457746479	0.34169398033	0.4735915493	20.3855633803	1.53469598076	0.53873239437	
	E003	83.2772		5.048	0.39255150555	0.528	11.752	1.45475504323	0.58	
	E004	179.45		0.5	0	0.75	47.25	1	0.75	
	F004	230.076470588		4.86470588235	0.09431680774	0.35294117647	184	1.29380475594	0.41176470588	
	F015	2123.95510204		5.44693877551	0.01686024728	0.30612244898	1377.42857143	1.16387580673	0.42857142857	
	F016									
	F111									
	F117	845.2625		0.75	0	0.25	490.875	1	0.25	
	T001	343.8		3.90571428571	0	0.4	157.128571429	1.21295474712	0.45714285714	
	T038									
	T043	16.3374449339		11.7810572687	0.62689301873	0.61674008811	5.58590308370	2.49598670948	0.60792951542	
	U002	36.8867256637		16.9238938053	0.74790838737	0.50442477876	14.0176991150	2.58380058096	0.27433628319	
	AVG	**306.607**		**6.479**	**0.246**	**0.443**	**168.686**	**1.551**	**0.466**	
	WT AVG	**2.592**		**9.179**	**0.513**	**0.435**	**17.204**	**1.901**	**0.430**	
WC91	A010	268.31092437		3.70546218487	0.31364100238	0.79831932773	142.756302521	1.78147220427	0.35294117647	

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC91	B001	1024.43076923		3	0	0.92307692308	222.846153846	1	0	
	B002									
	B052	64.8558252427		0.93932038835	0	0.41747572816	9.53398058252	1.01002192296	0.06310679612	
	C005	16.4491474423		5.38726178536	0.53034760105	0.32848545637	4.26529588766	1.75480839914	0.33801404213	
	C009	185.767164179		2.49850746269	0	0.31343283582	126.253731343	1.09105129375	0.19402985075	
	C010	279.835789474		1.62842105263	0.02262443439	0.70526315789	57.5052631579	1.24306950583	0.50526315789	
	C130	229.561119516		7.44236006051	0.2019486767	0.36762481089	96.8774583964	1.52195502260	0.17095310136	
	C135	463.658403361		7.12899159664	0.15152943950	0.25210084034	120.352941176	1.38696334565	0.23949579832	
	C141	83.6839686099		5.28071748879	0.36618970788	0.37780269058	25.9618834081	1.37877741222	0.31838565022	
	E003	77.3951672862		2.46840148699	0.0061746988	0.47955390335	10.9219330855	1.22198093415	0.156133829	
	E004	79.7555555556		2.06666666667	0	0.11111111111	21	1.55388471178	0.11111111111	
	F004	3911.3		2.5	0.2	1	3128	3.01204819277	0	
	F015	342.348026316		4.10032894737	0.21002807862	1.47368421053	222.019736842	2.67995356037	0.05263157895	
	F016	456.927433628		4.73672566372	0.39411489958	1.74557522124	318.502212389	2.81947956174	0.01106194690	
	F111									
	F117	845.2625		15.3125	0.11428571429	5	490.875	6.25	0.25	
	T001	173.136690647		0.79136690647	0	0.26618705036	79.1294964029	1.31894484412	0.00719424460	
	T038	6182.23636364		11.7636363636	0.91499227202	0.81818181818	5409	5.62853414528	0.54545454545	
	T043	264.9		3.03571428571	0	0.42857142857	90.5714285714	1.50282885431	0.21428571429	
	U002									
	AVG	**830.545**		**4.655**	**0.190**	**0.878**	**587.676**	**2.120**	**0.196**	
	WT AVG	**6.664**		**4.037**	**0.386**	**0.442**	**52.229**	**1.586**	**0.239**	
WC93	A010									
	B001									
	B002									
	B052	238.576785714		3.26071428571	0	0.48214285714	35.0714285714	1.07260338346	0.51785714286	
	C005									
	C009									
	C010									
	C130									
	C135									
	C141									
	E003									
	E004									

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
WC93	F004	93.1261904762		2.75714285714	0.11658031088	0.30952380952	74.4761904762	1.2146003776	0.30952380952	
	F015									
	F016	219.015058324		0.83976670201	0.01603737846	0.90880169671	152.664899258	1.5844654755	0.01272534464	
	F111									
	F117	520.161538462		16.7	0	0.92307692308	302.076923077	1.76906779661	0.92307692308	
	T001									
	T038									
	T043									
	U002									
	AVG	**267.720**		**5.889**	**0.033**	**0.656**	**141.072**	**1.410**	**0.441**	
	WT AVG	**46.690**		**3.698**	**0.087**	**0.526**	**103.862**	**1.316**	**0.342**	
WC96	A010	4257.2		2.74666666667	0	0.4	2265.06666667	1.19941775837	0.26666666667	
	B001									
	B002									
	B052									
	C005									
	C009									
	C010									
	C130	1061.11818182		11.5125874126	0.75581607240	0.20979020979	447.804195804	3.19794094794	0.18881118881	
	C135	574.743229167		3.4921875	0.41774794929	0.33333333333	149.1875	1.09817216981	0.234375	
	C141									
	E003	143.581379310		1.48206896552	0	0.36551724138	20.2620689655	1.08180216461	0.36551724138	
	E004	179.45		3.25	0	0	47.25	1	0	
	F004									
	F015									
	F016	4130.624		14.854	0.76545038374	0.28	2879.26	2.66200716846	0.3	
	F111									
	F117									
	T001									
	T038	11334.1		9.06666666667	0.79779411765	0.33333333333	9916.5	2.16905901116	0.33333333333	
	T043									
	U002									

WUC	VEHICLE	FHBMA	ARATE	MH/MA	PCTOFF	REMRAT	SBMA	CREWSIZE	PCTINHER	SCHD MH
	AVG	**3097.260**		**6.629**	**0.391**	**0.275**	**2246.476**	**1.773**	**0.241**	
	WT AVG	**63.352**		**3.193**	**0.563**	**0.344**	**202.096**	**1.213**	**0.323**	
WC97	A010	68.7384284177		3.38815931109	0.13667556233	0.96232508073	36.5726587729	1.44176991961	0.00322927879	
	B001	211.390476190		4.56507936508	0.01008344924	0.55555555556	45.9841269841	1.37917805592	0.04761904762	
	B002	89.4105263158		2.94736842105	0	0.63157894737	18.7368421053	0.99910793934	0.05263157895	
	B052	76.3445714286		2.87714285714	0.07467725919	0.96	11.2228571429	1.07356076759	0.00571428571	
	C005	118.410108303		4.18953068592	0.02352434296	1.82310469314	30.7039711191	2.88933150753	0.17328519856	
	C009	6223.2		4	0	0	4229.5	1	0	
	C010	2658.44		16.41	0	2.6	546.3	4.1025	0	
	C130	665.525877193		5.74210526316	0.12809349221	0.71929824561	280.859649123	1.55612608758	0.0701754386	
	C135	535.683009709		3.91990291262	0.09919504644	1.22815533981	139.048543689	1.85777389224	0	
	C141	1588.21489362		3.42127659574	0.04975124378	0.10638297872	492.723404255	1.12913419001	0.06382978723	
	E003	416.386		4.21	0.01662707838	0.84	58.76	1.34076433121	0.04	
	E004	11.7672131148		1.65245901639	0.01488095238	1	3.09836065574	1.11652636243	0	
	F004									
	F015	74.0211948791		4.61834992888	0.11105122124	0.96088193457	48.0042674253	1.53433552454	0.02062588905	
	F016	53.0519393784		4.91569483689	0.14606412775	0.93937837144	36.9799640380	1.67771154843	0.02799897251	
	F111	1807.025		15.375	0.01626016260	0.75	766.5	1.25	0.25	
	F117	6762.1		5	0	1	3927	2	0	
	T001									
	T038	45.0660039761		1.74625579854	0.05028272172	0.91915175613	39.4294234592	1.55915696298	0.00795228628	
	T043	1854.3		1	0	0.5	634	1.49253731343	0	
	U002									
	AVG	**1292.171**		**4.999**	**0.049**	**0.916**	**630.301**	**1.633**	**0.042**	
	WT AVG	**6.007**		**2.784**	**0.055**	**0.977**	**36.122**	**1.363**	**0.034**	